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Injury deaths, Australia 1999

With a focus on the transition
from ICD-9 to ICD-10

Renate Kreisfeld, James Harrison



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Injury deaths, Australia, 1999

With a focus on the transition from ICD-9 to ICD-10

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Australian Institute of Health and Welfare
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Executive summary

All injury deaths in 1999

A total of 8,361 injury deaths were registered in 1999. Of these, 70% were male. The age-standardised rate for males of all ages was 62.4 per 100,000 population and 26.2 per 100,000 for females of all ages. Rates of injury death were highest for young adults in the age range 20–39 years, and for males in particular who accounted for more than 30% of all injury deaths in 1999.

In 1999, the most common cause of injury death was suicide which accounted for 30% of all injury deaths in that year. This was followed by transport-related injury which accounted for 24% of all injury deaths.

Following a downward trend between 1979 and 1993, rates commenced a steady but slight upward movement in 1994.

The Northern Territory had the highest rate of injury deaths in 1999 (63.0 per 100,000 population), followed by Tasmania (54.2 per 100,000) and Western Australia (46.8 per 100,000).

Of all deaths registered in Australia in 1999, the most common underlying causes were diseases of the circulatory system (40%), neoplasms (28%), and diseases of the respiratory system (8%), followed by injury (6% of all deaths).

Injury and poisoning was the fourth leading cause of death of Australians and is the leading cause of death for persons aged 1–44 years, accounting for 51% of all deaths in this age group in 1999. (During the first year of life, congenital and perinatal conditions were the most common cause of death.)

Major causes of injury death in 1999

Major causes of injury death ^(a)	Number of deaths	Percentage of all injury deaths	Rate per 100,000 population
Unintentional			
Transport-related	2,011	24%	10.6
Falls ^(b)	1,272	16%	7.1
Drowning	278	3%	1.5
Poisoning by pharmaceuticals	1,016	12%	5.3
Smoke, fire and flames, heat and hot substance deaths	101	1%	0.4
Intentional			
Suicide	2,492	30%	13.2
Homicide	306	4%	1.6

(a) See later sections for inclusion criteria.

(b) The values given for falls were derived using the revised definition described in Chapter 6.

Transport

2,011 deaths were registered in 1999 as being the result of transport-related injury. Males accounted for 72% of all transport-related deaths in 1999.

1,722 of all transport-related deaths resulted from on-road collisions in which a motor vehicle had been involved. Of these 1,722 cases, 65% were motor vehicle occupants. Of the remainder, pedestrians accounted for 18%, motorcyclists 10% and pedal cyclists 6%. Drivers represented the largest group of vehicle occupant deaths, and three times as many drivers were male.

By far the largest proportion of vehicle occupants died while travelling in a car. The involvement of occupants of heavy transport vehicles and pickup trucks or vans was also very evident.

Suicide

2,492 suicide deaths were registered in 1999, representing an age-adjusted rate of 13.2 deaths per 100,000. As in previous years, males had higher rates of suicide than females in all age groups. In 1999, the overall male age-adjusted rate was 21.6 deaths per 100,000, around four times the female rate of 5.1 deaths per 100,000.

The three most commonly coded means of suicide were *Suffocation* (41%, of which the major proportion would have been hangings); *Poisoning* (35%, which included car exhaust); and *Firearms* (11%).

Unintentional falls

Analysis of deaths in 1999, based on Underlying Cause of Death, showed that *Unintentional falls* resulted in 520 deaths. This is a large underestimate, resulting from the transition to ICD-10, which does not have an equivalent to the category to which most deaths of older persons due to falls were coded under ICD-9 (i.e. E887). Multiple Cause of Death data can be used to estimate the number of cases that would formerly have been coded to E887. Based on this method, the number of deaths due to *Unintentional falls* registered in 1999 was 1,255. 86% of these were persons aged 65 years or older. Rates of death from this cause rise steeply with age. The number of deaths per year is rising, largely because the population in this age group is growing.

Unintentional drowning

278 deaths were registered in 1999 as having resulted from *Unintentional drowning*. This equates to an age-adjusted rate of 1.5 per 100,000 population. Close to three times as many men as women drowned during 1999 (203 males, 75 females). 22% of *Unintentional drowning* deaths occurred to children aged 0–4 years, of whom 27 drowned in a private swimming pool, 10 in a bathtub, and another 13 after falling or wandering into a body of water other than a swimming pool. *Unintentional drowning* accounted for 34% of all injury deaths in the 0–4 year age group.

Unintentional poisoning

1,088 *Unintentional poisoning* deaths were registered in 1999, at an overall age-adjusted rate of 5.7 per 100,000 population. These 1,088 *Unintentional poisoning* deaths

comprised 42% of the 2,612 deaths registered in 1999 in which poisoning was coded as a cause. The next largest group was *Intentionally self-inflicted poisoning* (35%).

93% of *Unintentional poisoning* deaths were the result of the toxic effects of pharmaceutical agents. In 1999, 74% of unintentional deaths due to pharmaceutical agents involved males, with the rates being highest for males aged 20–44 years.

The most common group (44%) of pharmaceutical agents involved in *Unintentional poisoning* deaths was *Narcotics and psychodysleptics (hallucinogens)*.

A much smaller group of *Unintentional poisoning* deaths were associated with *Other substances*, including alcohol. In 1999, a total of 72 deaths were registered as having been caused through poisoning by *Other substances*. Most commonly, these deaths resulted from exposure to certain types of *Gases and vapours* such as carbon monoxide, motor vehicle exhaust gas, nitrogen oxide and sulphur dioxide. Alcohol was the next most commonly-coded agent in this group of deaths.

In general, this report focuses on deaths registered as having an 'External Cause' as the Underlying Cause of Death. Multiple Cause of Death information enables identification of poisoning deaths outside this scope. In 1999, 449 such deaths were registered, in 412 of which poisoning was by a 'drug, medicament or biological substance' ('Drugs'). An index for drug-related mortality that takes account of these 'natural causes' deaths shows a rapid increase in recent years, though not as rapid as an index that omits them.

Smoke, fire and flames, heat and hot substances

Of the 134 deaths due to *Smoke, fire and flames, heat and hot substances* registered in 1999, 101 (75%) were recorded as unintentional. The remainder were recorded as suicide (n=24; 18%), homicide (n=6; 5%) and undetermined intent (n=3; 2%).

About half of the 101 unintentional deaths from this cause were the result of *an uncontrolled fire in a building or structure*. *Clothing ignition* accounted for three deaths, all among people aged 65 years and over. The *ignition of highly flammable materials* (e.g. petrol or kerosene) accounted for 8 deaths. A further 8 deaths were the result of *Scalds*, 7 from *Hot tap water* and one from *Another type of hot fluid*. In most cases, deaths from scalds involved older people; only one scald case involved a child in the range 0–4 years.

The male adjusted rate for this category of death was around twice the equivalent female rate.

Homicide

There were 306 deaths registered to this category in 1999, accounting for 4% of all injury deaths. The overall age-adjusted rate for homicide in 1999 was 1.6 deaths per 100,000 population.

Males were more than twice as likely as females to be the victims of homicide. 59% of male homicides occurred to males in the age range 20–44 years. 20 deaths were at ages 0–4 years, and another 6 died at ages 5–9 years.

For both male and female victims, the most frequently used means of assault was a cutting or piercing instrument, accounting for 32% and 24% respectively. A firearm was used in 18% of homicides in 1999.

As in previous years, the rate of homicide for the Northern Territory was well above the national rate. The majority of these deaths were recorded as Aboriginal or Indigenous (7 of 13).

Trends in injury deaths

The *International Classification of Diseases* (ICD) is used to code causes of death. The tenth revision of the ICD (ICD-10) replaced the ninth revision (ICD-9) for deaths registered from the beginning of 1999. The introduction of a new version of the ICD has produced an interruption of time-series, particularly for some types of injury death. The calculation of Australian estimated comparability factors (CFs) indicates that the transition to ICD-10 has had minimal impact on the coding of *Unintentional drowning* (CF=1.02), *Transport* (CF=1.01), *Smoke fire and flames* (CF=0.99), *Suicide* (1.00) and *Homicide* (1.00). *Unintentional falls* (CF=0.39), *Unintentional poisoning (pharmaceuticals)* (CF=1.07) and *Unintentional poisoning (other substances)* (CF=1.18) are affected to a greater extent.

Although there has been some fluctuation in recent years, the age-adjusted drowning rate for Australia has fallen by 35% in the period 1979–1999. This continues a generally downward trend since at least 1920. This decline has slowed or ceased in recent years.

For transport-related injury as a whole, the overall age-adjusted rates fell by 60% in the period 1979–1999. The fall in rates slowed in the 1990s, and rates have changed little in the latest few years. There was a rise of 3% in age-adjusted related death rates from 1998–1999.

Assessment of trends in deaths due to *smoke, fire, flame and hot substances* is difficult because annual rates fluctuate considerably due to relatively small case numbers and because of clusters of cases for years in which bushfire disasters occurred. There has, however, been a general downward trend in rates and the age adjusted rate for persons in 1999 was 55% lower than in 1979.

The adjusted suicide rate for males had an upward trend for about a decade to 1997. Rates were lower in 1998 (14.3 per 100,000) and 1999 (13.2 per 100,000).

Homicide rates have remained relatively constant between 1979 and 1999.

Comparability between 1998 and 1999 is complicated by effects of the change of ICD revision for the remaining major cause groups, in particular *Unintentional falls* and *Unintentional poisoning*. Age-adjusted rates of mortality due to *Unintentional falls* have remained fairly constant since the early 1990s, and there is no indication of substantial change in 1999. The rate of mortality due to *Unintentional poisoning* by drugs has risen during the 1990s, most sharply after 1996.

Multiple causes of injury deaths

Until 1996, the Australian Bureau of Statistics (ABS) coded a single Underlying Cause of each death (UCoD). For deaths registered since the beginning of 1997, the ABS has also coded up to 20 Multiple Causes of Death (MCoDs). An MCoD is any morbid condition, disease or injury (additional to the UCoD) that appears on the death certificate as having been a part of the train of events which led directly to a death.

MCoD data have been used in two ways for this report.

First, they have enabled better understanding of some types of injury death previously specified solely in terms of UCoD codes representing External Causes of injury and poisoning (notably *unintentional falls* and *poisoning by drugs*).

Second, MCoD data provide some insight into the involvement of injury, poisoning (and External Cause of injury or poisoning) in the occurrence of deaths that have been given UCoD codes representing 'natural' causes of death (i.e. diseases).

In 1999, a total of 128,102 deaths from all causes were registered in Australia. Of these, 8,361 were given an External Cause as the Underlying Cause of Death. In a further 5,127 cases, where the Underlying Cause was a 'natural cause', an External Cause of injury or poisoning was recorded as a Multiple Cause of Death.

The largest proportion of these 5,127 deaths fell into the category *Complications of medical and surgical care* (50%). This was followed by *Unintentional falls* (26%) and *Unintentional poisoning by pharmaceuticals* (7%).

Patterns of External Causes differ between UCoD and MCoD fields. For example, *Complications of medical and surgical care (Y40–Y84)* are not commonly recorded as the UCoD (97 deaths registered in 1999). However, during the same period, a total of 2,968 deaths were assigned at least one Multiple Cause of Death code (MCoD) indicating *Complications of medical and surgical care*. 2,635 of these had a 'natural cause' recorded as the UCoD. Hence, MCoD information reveals more about the role of this factor in Australian deaths than does UCoD alone.

Issues in reporting injury deaths

Several changes occurred in the late 1990s in the way that injury mortality data are processed in Australia. These include the introduction of automated coding, the provision of Multiple Cause of Death data and the change from the ninth to the tenth revision of the International Classification of Diseases.

These changes will improve the value of mortality data for injury surveillance. However, their effects on data also require careful assessment. Apparent trends in rates during the transition period should be interpreted with special caution.

These issues are described and discussed where relevant throughout the report, and in more detail in a chapter on *Issues in reporting injury deaths*.

Transition to ICD-10

From 1999, deaths data have been coded according to the 10th revision of the *International Classification of Diseases (ICD-10)* (World Health Organization 1992). Between 1979 and 1998, the previous version (ICD-9) was used (World Health Organization 1977).

Comparability factors based on dual-coded data for 1998 suggest that this transition has had an impact on the ability to show changes over time for several major causes of injury. By far the most seriously affected group of deaths is those that result from *Unintentional falls*. Other categories have been affected to a much lesser degree (National Injury Surveillance Unit 2002).

Other issues

Other factors which have had an impact on injury mortality reporting, or might do so, include:

- The change from manual to automatic coding of deaths by the ABS in 1997. This was accompanied by a change in some rules for selecting the Underlying Cause of Death.
- Differences in terminology used when certifying certain types of deaths (e.g. terms such as 'abuse' and 'dependence' when certifying drug-related deaths) interact with ICD coding rules with the result that different Underlying Cause codes may be allocated to similar types of death. This may account for an apparent increase in the proportion of drug-related deaths which are allocated an External Cause code as the Underlying Cause of Death.
- Frequently, little or no information is available on the nature of the External Cause for injury deaths where the deceased person was old. Factors involved in this include the fact that deaths of older persons following a fracture are commonly certified by a medical practitioner (most other injury deaths are certified by a coroner), and age-based criteria used by the ABS to decide whether to seek additional information to enable meaningful coding of the External Cause of Death (see Chapter 6).
- Analysis of Multiple Cause of Death codes (available for deaths registered in 1997 and subsequent years) reveals that codes for injury and External Causes appear in many more records than those having an External Cause as the Underlying Cause of Death. Further work is required to interpret and present this additional evidence of the extent of injury-related mortality.

Abbreviations used

ABS	Australian Bureau of Statistics
AIHW	Australian Institute for Health and Welfare
CF	Comparability Factor
E-code	External cause code in ICD-9
ICD	International Classification of Diseases
ICD-9	International Classification of Diseases, 9th Revision
ICD-10	International Classification of Diseases, 10th Revision
MCoD	Multiple Cause of Death
nec	Not elsewhere classified
NISU	National Injury Surveillance Unit
RCIS	Research Centre for Injury Studies
UCoD	Underlying Cause of Death

1 Introduction

Data on all deaths registered in Australia each year are compiled by the Australian Bureau of Statistics (ABS). Since 1992, the National Injury Surveillance Unit (NISU) has used these data as the basis for annual reports on injury deaths. The aim of these reports, through their coverage of deaths due to External Causes, and their presentation of detailed analyses of the major groupings of injury or poisoning, has been to describe and monitor the pattern of injury mortality experienced in Australia.

The previous editions of NISU's injury mortality reports were published in the *Australian Injury Prevention Bulletin* series. This is the first of the injury mortality reports to be published in the Injury Research and Statistics series.

The main focus of this report is injury deaths registered in 1999, although some reference is also made to 1998 data. These are the years on either side of a major change in the way in which causes of death were coded. In addition, trends in injury mortality are described for the period from 1979.

The report begins by examining the implications for the reporting of injury statistics of the transition from the 9th to the 10th revision of the *International Classification of Diseases* (ICD-10) for coding mortality data at the beginning of 1999. This is followed by a series of chapters which deal with mortality in relation to a series of major causes of injury and a chapter on analysis of codes assigned to indicate *Multiple Causes of Death*. Two appendices are also included. The first details technical issues relating to the sources, analysis and interpretation of mortality data. The second appendix contains a range of tables providing detailed summary injury mortality data for deaths registered in 1998 and 1999.

2 Issues in reporting injury deaths

2.1 Implications of the change to ICD-10

Beginning with deaths registered in 1999, the ABS has coded Australian Mortality Data according to the 10th Revision of the International Classification of Diseases (ICD-10) (World Health Organization 1992). From 1979 until 1998, deaths data in Australia were coded according to the 9th Revision of ICD (World Health Organization 1977).

The *International Classification of Diseases* (ICD) has been in existence since the beginning of the twentieth century. The ICD falls under the auspices of the World Health Organization, which coordinates and oversees a process of periodic revision. The previous revision – from ICD-8 to ICD-9 – occurred in the mid 1970s, and was introduced for coding Australian deaths in 1979.

Changes between ICD-9 and ICD-10 which have a bearing on the coding of injury mortality data are:

- Some changes to the rules for deciding which of the several causes of death that might be mentioned on a death certificate should be designated the Underlying Cause.
- The inclusion of a new chapter *External Causes of Mortality and Morbidity* to take the place of the previous supplementary classification.
- The adoption of an alphanumeric coding scheme.
- A change of axis for injuries, giving primacy to body part instead of nature of injury.
- A change of axis for land transport accidents, giving more information about type of road vehicles.
- More specific categories for some External Causes, and less specific categories for others.
- Adoption of the term ‘sequelae’ in preference to ‘late effects’.
- A changed fourth-character classification for place of injury occurrence, and a new short classification for activity at the time of injury.

The transition from ICD-9 to ICD-10 presents some challenges for those who work with, and rely on, data that are coded to External Causes of injury and poisoning (Australian Institute of Health and Welfare 2001).

2.1.1 Trends over time

An important use for injury statistics is the presentation of trends in the rates of injury. Revision of the ICD produces some level of discontinuity in trends (Australian Institute of Health and Welfare 2001).

Since 1992, NISU has maintained a convention of reporting trends for injury related deaths in relation to several major injury groups: *Transportation; Suicide; Unintentional Falls; Drowning; Poisoning by pharmaceuticals; Poisoning by other substances; Homicide; Fires/burns/scalds; Other unintentional injuries; Injuries of undetermined intent; and Medical misadventure or complications*. These trends have been calculated for the period commencing with 1979, when ICD-8 was replaced by ICD-9 for the coding of mortality data.

The transition to ICD-10 has disrupted comparability for at least some of the major groups of injury. The evidence and explanations for this are detailed below.

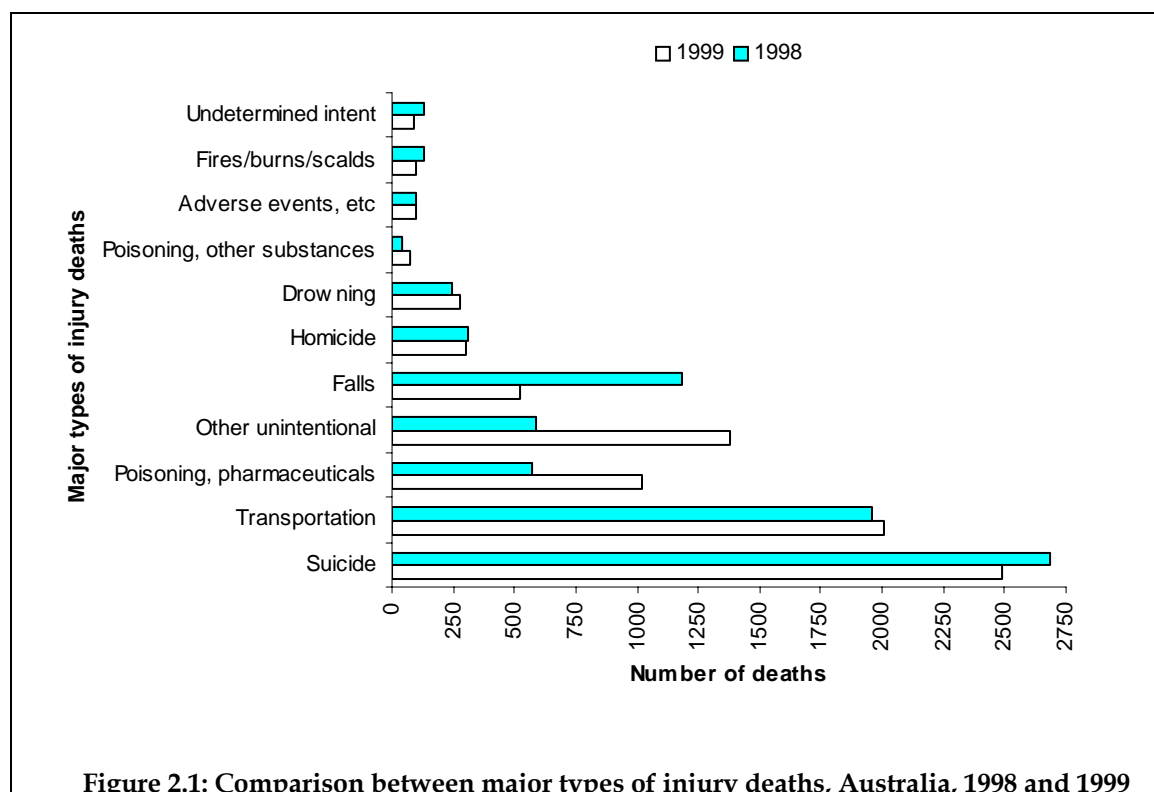
2.1.2 NISU research into comparability

Awareness that the change to ICD-10 might produce discontinuity prompted careful attention to possible instances during analysis of the data presented in this report. In addition, we also analysed a set of 1998 deaths data, provided by the ABS, which had been coded to both ICD-9 and ICD-10 (National Injury Surveillance Unit 2002).

Differences in case numbers between 1998 and 1999

Figure 2.1 below shows large differences between 1998 and 1999 in the frequency of deaths registered for three major External Causes of injury: *Unintentional Poisoning, pharmaceuticals* (77% rise); *Unintentional Falls* (56% drop); and *Other unintentional injuries* (133% rise). The group *Unintentional poisoning, other substances* showed a large proportionate rise. Given the relatively small number of cases involved, all or much of the change could be chance variation.

These large changes were unlikely to be entirely due to changes in mortality, and were likely to be linked to the transition from ICD-9 to ICD-10. The detailed findings of these investigations are reported in the relevant chapters. In summary, the increase in cases in the group *Unintentional Poisoning, pharmaceuticals* appears to be due to a combination of an increase in the number of drug-related deaths, combined with an increase in the proportion of these deaths given an External Cause as the Underlying Cause of Death. The decline in the *Unintentional Falls* category is due to a difference between ICD-9 and ICD-10, but the large size of the decline reflects aspects of the way that information on cause of death is obtained. Most of the rise in the *Other unintentional injuries* category reflects the inclusion of a type of case that was previously included in the *Unintentional Falls* category.



Analysis of dual-coded deaths data for 1998

Comparability Factors (CFs) were calculated for each of the major types of injury referred to in Figure 2.1.

The data file used for this analysis contains records for all deaths registered in Australia in 1998. Each record includes two data fields containing codes representing the Underlying Cause of Death (UCoD). One is an ICD-9 code (the one allocated by the ABS during the ordinary process of coding deaths registered in 1998) and the other is an ICD-10 code (allocated by the ABS during special re-coding of the same data according to ICD-10).

The CF was calculated for each 'major type' of injury by dividing the number of cases of that 'major type' as specified in terms of ICD-10 codes by the number of cases in the same 'major type' category as specified in terms of ICD-9 codes. A CF of 1.00 indicates no difference between coding outcomes under the two versions of ICD. A CF larger than 1.00 indicates that more deaths were assigned to the category under ICD-10 than would have occurred under ICD-9. A number less than 1.00 indicates the contrary.

The comparability factors calculated by NISU are shown in Table 2.1, along with values from a published study of US deaths data. In summary, the analysis of dual-coded data showed that, for deaths registered in 1998:

- The use of ICD-10 would have led to a 3.4% larger number of deaths for which the UCoD was an External Cause.
- The 3.4% increase was the net result of an additional 312 cases in which, under ICD-9, the UCoD had not been an External Cause, and a loss of 43 cases where the UCoD had been coded to an ICD-9 External Cause. This amounted to a net difference, in 1998, of 269 cases.
- 229 (73%) of the 312 additional cases were attributed to unintentional External Causes under ICD-10, 75 (24%) to medical misadventure, complications, etc, and 8 (3%) to External Causes of undetermined intent.
- 23 (53%) of the cases lost from the External Causes chapter under ICD-10 had been attributed to medical misadventure, complications, etc under ICD-9, and the remaining 20 (47%) to unintentional External Causes.

The 312 deaths that were added to the External Causes group under ICD-10 had a wide range of ICD-9 codes for UCoD. Many of these records included ICD-9 Multiple Cause codes with a scope similar to (or identical with) the Underlying Cause code allocated under ICD-10. This is consistent with the changed allocation being due to the changed ICD rules for deciding which of the causes of death mentioned in a record should be designated as the UCoD. Further investigation of this would require review of the coding of these cases, which was beyond the scope of the current project. (See following section for related US research.)

2.1.3 US research into comparability

In May 2001, the US *National Vital Statistics Reports* published a report of preliminary findings into US research undertaken to test the comparability of cause of death between ICD-9 and ICD-10 (Anderson et al. 2001). The reported results are preliminary estimates derived from investigations based on cause of death information from a large sample of 1996 death certificates filed in 50 US States, as well as the District of Columbia. The cause of death information in the sample had been 'double-coded' to classify the cases, by UCoD, to both ICD-9 and ICD-10.

In general, the US findings are similar to ours. The US and Australian comparability factors are quite similar except for the category *Unintentional falls* (Table 2.1). The likely explanation for the disparity in the factors for falls is discussed in Chapter 6. The US research did not provide a comparability factor for several major causes of injury specified in this report, including all forms of unintentional poisoning. Further details about the US research findings are included in relevant chapters of this report.

Table 2.1: ICD-10/ICD-9 Comparability factors for Australia and the USA: selected external causes of death

Major types of injury death	ICD-10/ICD-9 Estimated comparability factor	
	Australia ^(a)	USA ^(b)
All External Causes	1.034	Not reported
All unintentional External Causes	1.044	1.03
Transport	1.014	1.00
Falls	0.393	0.84
Falls (revised definition) ^(c)	1.050	Not reported
Unintentional drowning	1.016	1.00
Smoke, fire and flames	0.993	0.97
Suicide	1.00	1.00
Homicide	1.00	1.00
Poisoning, pharmaceuticals	1.072	Not reported
Poisoning, other substances	1.184	Not reported
Other unintentional	2.435	Not reported
Undetermined intent	1.047	Not reported
Adverse events, etc.	1.554	Not reported

(a) Calculated by NISU using ABS dual-coded data for deaths registered in 1998.

(b) Based on deaths registered in 1996 in the USA (Anderson et al. 2001).

(c) UCoD code = ICD-10 W00–W19, or X59 with any Multiple Cause code for fracture (S02, S12, S32, S42, S52, S62, S72, S82, S92, T02, or T14.2). See also section 6.1.

2.2 Other factors influencing data comparability

The change from ICD-9 to ICD-10 accounts for some differences in injury mortality rates in the period covered by this report. The influence of this factor on comparability was considered in Section 2.1.

Other factors which affected, or might have affected, comparability are considered in this section.

2.2.1 Change from manual to automated coding

Beginning with deaths registered in 1997, the ABS changed its coding processes in a way that has increased the information available about causes of death in Australia, at the cost of introducing a break in the time series.

The change is described in Appendices to the 1997 edition of *Causes of Death in Australia* (Australian Bureau of Statistics 2000). In outline, the ABS began using an Automated Coding System (ACS), which is designed to code all causes of death and conditions mentioned on a death certificate, and to allocate one of these as the Underlying Cause, according to ICD coding rules. The ACS is a suite of programs developed and used by the US National Center for Health Statistics (NCHS).

The ICD coding rules are somewhat open to differences of interpretation. The ACS was designed to implement the coding rules as interpreted by the NCHS. Differences between the rules as implemented in the ACS and as implemented by the ABS for manual coding are the main source of the discontinuity in Australian data identified by the ABS.

The extent of this break in series was estimated by the ABS by coding about 34,000 deaths registered in 1997 using their old manual method, and again using the ACS. The result of this process was a set of published comparability factors. The nature of the sample of cases limited production of factors to fairly common causes (Australian Bureau of Statistics 2000).

The comparability factors reported by the ABS for deaths due to External Causes are summarised in Table 2.2. A value above 1.0 indicates a cause category to which more deaths were allocated by the ACS than by the manual method.

The authors noted that 'Comparability factors for External Causes are close to 1.0 due to the extensive clerical intervention which has continued after the introduction of ACS.' That is to say, the ACS was unable to code most of the cases that were ultimately allocated an External Cause code, requiring largely manual coding. The small divergence from 1.0 of the reported factors is reassuring, nevertheless. This is because the set of records for which the ACS required clerical assistance and which were then coded to External Causes could, in principal, have omitted some of the cases that would have been coded to External Causes under the fully manual method. The results show no sign that this occurred.

Table 2.2: Comparability Factors: Automated vs Manual ICD-9 Coding

All External Causes (E800–E999)	1.01
Accidental deaths (E800–E949)	1.02
Motor vehicle traffic accidents (E810–E819)	1.00
Unintentional falls (E880–E888)	1.03
Unintentional drowning and submersion (E910)	0.99
Suicide (E950–E959)	1.00
Homicide (E960–E969)	1.03

Source: Selected rows from Table A5.2, ABS Causes of Death, Australia 1999.

The change from ICD-9 to ICD-10 required the introduction of a different version of automated coding software, because ICD-10 has different categories and different rules for allocating an Underlying Cause. We are not aware of any published report on the impact, if any, of the software version change (as distinct from the change of classification) on mortality coding.

2.2.2 Other issues

Possible influence of variation in terminology used on death certificates

Some decisions concerning which Underlying Cause code to allocate to a death are very sensitive to the choice of words by the person who certifies the death. For example, a certificate describing a death due to a heroin overdose and mentioning drug 'dependence' may be given a very different UCoD code than an otherwise identical case in which 'dependence' is not mentioned. The latter is more likely than the former to be given an External Cause code.

Differences between jurisdictions, or changes over time, in the choice of words to describe similar deaths might thus affect the apparent rates of some types of deaths, irrespective of real incidence.

This might account for part of the large increase in deaths coded as unintentional poisoning by pharmaceutical agents (almost double from 1998–1999). Only part of the large increase in this category can be explained by the transition to ICD-10 given an estimated comparability factor of 1.07. Part is likely to be due to a real increase in mortality from this cause. However, part may be due to changes in the allocation of MCoD codes to deaths of this type (see Chapter 8).

Certification of External Causes deaths by medical practitioners

A somewhat related issue is that some deaths whose UCoD is coded as being an External Cause are certified by a medical practitioner, while most are certified by a coroner. The proportion certified by a medical practitioner varies over time and between jurisdictions. This might affect apparent rates of particular External Causes of death because the External Cause cases certified by a medical practitioner frequently wind up in an uninformative 'dump code' group, most often X59 'Exposure to unspecified factor'. 'Unintentional falls' is the major group most subjected to this effect (see Chapter 6).

2.3 Mapping

Valid reporting of trends in injury mortality over time requires the use of categories that remain comparable. Previous NISU reports on injury mortality have reported in terms of a set of 'major groups' of External Causes (Bordeaux 1998). If comparable reporting according to these groups is to continue after the introduction of ICD-10, then each of the old categories, defined in terms of ICD-9, must be mapped to a new category.

The first and second columns of Table 2.3 contain the 'major group' categories and their definitions in terms of ICD-9 code ranges in the UCoD data field.

The third column contains ranges of ICD-10 codes. With one exception (Falls) these are simple ranges of ICD-10 UCoD codes.

The final column shows Comparability Factor (CF) values for the categories as defined here, based on the dual-coded Australian data for deaths registered in 1998.

CF values that are a long way from 1.00, indicate lack of comparability. The very low CF for 'Falls' and most of the high CF values for 'Other unintentional' are due to a specific difference between ICD-9 and ICD-10: ICD-10 has no category equivalent to ICD-9 code E887.

An ICD-10 specification substantially equivalent to the ICD-9 'Falls' category can be stated, but this depends on using MCoD data. A row has been added to the table showing the revised specification, and its associated CF. The re-allocation of cases produced by the revised specification for 'Falls' also corrects most of the difference in scope for the 'Other unintentional' group. The change reduced the CF for 'Other unintentional' from 2.43 to 1.14, based on 1998 deaths.

At face value, the code ranges for the other major groups appear to be substantially equivalent. However, CF values for some of them are quite high (Poisoning; Complications of medical and surgical care), suggesting that code equivalence may not be complete, or that some other factor is affecting findings. These issues are considered in relevant chapters. In addition, another NISU report includes a detailed analysis of case flows under ICD-9 and ICD-10 (National Injury surveillance Unit 2002).

Table 2.3: Major groups of External Causes of death: definitions in terms of ICD-9 and ICD-10 used in this report.

Major group	ICD-9 Codes	ICD-10 Codes	Comparability factor*
1. Transportation	E800–E848	V01–V99	1.014
2. Drowning	E910	W65–W74	1.016
3. Poisoning, pharmaceuticals ²	E850–E858	X40–X44	1.072
4. Poisoning, other substances ²	E860–E869	X45–49	1.184
5. Falls UCoD only ¹	E880–E888	W00–W19	0.393
5a. UCoD and MCoD ³	E880–E888	W00–W19 or X59 and any fracture code	1.050
6. Fires/burns/scalds	E890–E899; E924/0,8,9	X00–X19	0.993
7. Other unintentional ¹	E900–E909; E911–E923; E924/1; E925–E929	W20–W64, W75–W99, X20–X39, X50–X59, Y85, Y86, Y89.9	2.435
8. Intentional, self inflicted	E950–E959	X60–X84, Y87.0	1.000
9. Intentional, inflicted by another	E960–E978; E990–E999	X85–Y09, Y87.1, Y35–Y36, Y89.0, Y89.1	1.000
10. Undetermined intent	E980–E989	Y10–Y34, Y87.2	1.047
11. Complications or sequelae of medical and surgical care	E870–E879; E930–E949	Y40–Y84, Y88.0–Y88.3	1.554

Note: The four least comparable groups have been shaded.

¹ Stated ranges for ICD-9 and ICD-10 are not equivalent. See Chapter 6.

² Stated ranges for ICD-9 and ICD-10 are of doubtful equivalence. See relevant chapters.

³ Revised ICD-10 specification adds cases where UCoD is X59 and any code meaning 'fracture' is in any MCoD field.

* Calculated by NISU using ABS dual-coded data for deaths registered in 1998.

2.4 Place of occurrence codes

The authors of the sixth revision of the ICD, produced in 1948, included a supplementary classification of type of *Place of occurrence* of injury to the External Causes classification. They recognised that information on *Place* can provide important insights, which are sometimes useful for prevention. For example, nearly all drowning of young children occurs at home, while drowning at other ages often occurs at other types of *Place*.

The *Place* item was treated as an optional part of the ICD, and was not applied in routine Australian mortality data until 1997, as part of the changes including automated coding and the introduction of ICD-10.

The one-digit *Place* classification allows only a small number of types of *Place* to be distinguished. The categories provided by the ICD-10 *Place of occurrence* classification are:

- Home
- Residential institution
- School
- Sports area
- Street or highway
- Trade or service area
- Industrial area (including construction site, mine, etc)
- Farm (excludes farm house)
- Other specified place
- Unspecified

According to ICD-10 guidelines, a *Place of occurrence* code can accompany External Cause codes in the range W00–Y34 (except Y06 and Y07). Note that this code range excludes transport-related injuries. Hence, values in the ‘street and highway’ category in summarised *Place of occurrence* data are typically lower than might be expected, including only injuries in this setting that were not related to transport (e.g. falls; assault) (World Health Organization 1992).

Examination of deaths data for 1999 indicates that the ABS is generally following this guideline. All of the 6,148 deaths with Underlying Cause codes in the range specified as requiring a *Place* code have one (though the code is 9, *Unspecified*, in 53% of these). In contrast, only 2.3% of the 2,213 deaths coded to External Causes outside the specified range have been assigned a *Place* code. A similar proportion of the deaths allocated an Underlying Cause code that is not an External Cause were assigned a *Place* code (2.1%). Where a *Place* code was assigned to a case whose Underlying Cause code was out of the range for which a *Place* code is required, its value was 9, *Unspecified*, in 92% of instances.

Examination of the data also shows that meaningful *Place* codes have not been provided for most deaths that have an External Cause code in the designated range. Much of the most common values are null and ‘Unspecified’. We have reported the available data in relevant chapters, though it must be interpreted very cautiously.

The incompleteness of this data item reflects limitations in the data available to the ABS for use in coding the item. As for External Causes, generally, information on *Place of occurrence* is obtained from coroners’ reports and, to a lesser extent, from police

reports, state and territory death registers, and newspaper clippings. Data from the National Coronial Information System (NCIS), should enable more complete and meaningful coding of *Place of occurrence*.

2.5 Activity codes

The tenth revision of the ICD extends the approach, begun with the sixth revision, of adding supplementary classifications within the External Causes classification. *Place of occurrence* was the only one of these in ICD revisions six to nine. A short classification of type of Activity being undertaken at the time of injury was added to the 10th revision.

The Activity item is designed to remove some important 'blind-spots' of the ICD. For example, the ICD External Cause classification has not previously provided a way to distinguish work-related injury deaths, or injury deaths due to participation in sport, though both of these issues are of considerable interest to the public and policymakers.

ICD-10 guidelines state that an *Activity* code can accompany External Cause codes in the range V01–Y34 (World Health Organization 1992). Note that this code range is wider than that for *Place of occurrence*, and includes transport-related injuries.

This item, like the *Place* item, is a new addition to the Australian mortality data collection, and examination of data for 1997 and 1998 shows that specific activity information is, so far, provided for only a small proportion of deaths within the designated code range. Because the proportion of cases given specific *Activity* codes is so low, we have restricted use of this item in the present publication to a brief overview (Chapter 3).

Data from the National Coronial Information System (NCIS), should also enable more complete and meaningful coding of *Activity*.

2.6 Case definition

Prior to 1997, the only option for defining a subset of deaths in Australia as 'injury' cases was to select in terms of a range of UCoD codes. The cases selected were usually all of the deaths that had been allocated an External Cause code (i.e. ICD-9 E800–E999), or most of them (e.g. ICD-9 E800–E869, E880–E929 and E950–E999, a definition used for NHPA injury indicators, which excludes medical misadventure and related causes).

The availability of Multiple Cause of Death data for deaths registered in 1997 and more recently, enables 'injury' cases to be specified in other ways. In particular, it is now possible to select cases in terms of a range of ICD codes for diagnosis (or pathophysiological conditions) which correspond to a definition of injury. We have discussed this approach to case selection as part of a general technical review of the NHPA injury indicators (Harrison & Steenkamp 2001).

For most parts of this report, we have retained the practice of specifying cases for inclusion in terms of Underlying Cause codes. For 'All injury deaths' (Chapter 3), we included cases with any External Cause codes, and for other chapters we included cases with particular ranges of External Cause codes.

We chose not to apply a definition based on MCoD in this report for two main reasons. First, when the main part of the analysis for this report was done, we considered that

more work was required to assess the available MCoD data in relation to a range of possible ways to apply an operational definition of 'injury' case. This was particularly true for cases with more than one injury code in their MCoD fields, and for those with one or more injury codes in MCoD fields and an Underlying Cause code that is not an External Cause. Second, a case definition which relies on MCoD data cannot be applied to deaths registered before 1997, complicating reporting of trends.

We have, however, made use of MCoD data in three parts of the report.

Meaningful reporting of mortality due to unintentional falls required use of MCoD data on the presence of fractures (Chapter 6).

Analysis of cases having MCoD codes for poisoning diagnoses helped in the interpretation of apparent trends in deaths for which the UCoD is 'unintentional poisoning' (Chapter 8).

Chapter 12 provides a brief overview of UCoD and MCoD data for deaths registered in 1999 which fall outside the usual case definition of injury mortality (i.e. MCoD = an External Cause).

3 All injury deaths, Australia

(1998: ICD-9 E800–E999)

(1999: ICD-10 V01–Y98)

Table 3.1: Key indicators for all external causes deaths, Australia

Indicator	1998 ^(a)			1999 ^(b)		
	Males	Females	Persons	Males	Females	Persons
Cases	5,614	2,332	7,946	5,868	2,493	8,361
Injury and poisoning deaths as % of all deaths	8.4%	3.9%	6.2%	8.7%	4.1%	6.5%
Crude rate per 100,000 population*	60.4	24.8	42.5	62.4	26.2	44.2
Age standardised rate per 100,000 population*	63.3	23.6	43.0	65.5	24.7	44.5
Age standardised rate per 100,000 population (CF adjusted)*	65.4	24.4	44.5	n/a	n/a	n/a
Average years potential life lost (YPLL) before age 75 years	33	23	30	33	24	30

* Standardised rates based on ICD-9, multiplied by the CF (1.034), to improve comparability with 1999 rates based on ICD-10 (see 2.1.2).

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E800–E999.

(b) Deaths registered in 1999 for which UCoD code is ICD-10 V01–Y98.

3.1 Transition to ICD-10

Beginning with deaths registered in 1999, the ABS has coded Australian Mortality Data according to the 10th Revision of the *International Classification of Diseases* (ICD-10). Deaths registered to the end of 1998 were coded according to the 9th Revision of ICD. This change has had some effect on the ability to report trends over time for some aspects of injury. The likely impact of these changes was discussed in Chapter 2.

Analysis of dual-coded data for 1998 (described in Chapter 2) showed that the use of ICD-10 produced a net increase of 312 (3.4%) in the number of deaths for which the Underlying Cause (UCoD) was an External Cause code. Table 3.1 includes a set of ICD-9-based injury death rates for 1998 that have been adjusted upwards by this factor to improve their comparability with the ICD-10-based rates for 1999.

Most of the change was due to deaths coded to a ‘natural cause’ under ICD-9 being coded as an *Unintentional* External Cause under ICD-10 (i.e. E800–E869 and E880–E929; V01–X59, Y85–Y86). The net effect of the change to ICD-10 was an increase of 4.4% in the number of deaths coded to this category.

Analogous research from the US provides a point of comparison (Anderson et al. 2001). These authors did not report on all injury deaths. However, they did report on all deaths coded to an *Unintentional* External Cause, for which they found an increase of 3.1%, based on a sample of 1996 deaths. These authors found that the change was largely explained by differences between the coding rules for ICD-9 and those for

ICD-10 that are used to select the UCoD in cases with mention of an External Cause and a 'cause' of death (e.g. pneumonia following an injury).

3.2 Overview

In 1999, the total number of deaths registered from all causes in Australia was 128,102, an increase of 0.7% over 1998, for which 127,202 deaths were registered.

Injury and poisoning was the fifth leading cause of death in both 1998 and 1999 behind malignant neoplasms, ischaemic heart disease, cerebrovascular disease, and chronic obstructive pulmonary diseases. Of all deaths in 1998, 7,946 (6.2%) were the result of an External Cause of injury or poisoning. In 1999, the proportion of injury deaths (V01–Y98) was 8,361 (6.5%).

Of the 8,361 injury deaths in 1999, 102 were attributed to *Adverse Effects*. Under ICD-10, this category includes *Drugs, medicaments and biological substances causing adverse effects in therapeutic use* (Y40–Y59) and *Misadventures to patients during surgical and medical care* (Y60–Y69). These two categories are sometimes considered separately from other injury deaths. In this report, adverse effects are included in the calculation of counts and rates of *All Injury Deaths*. They are included in the 'Unintentional' column of Table 3.2.

Of the 8,361 injury deaths registered in 1999, 5,467 (65.4%) were unintentional (including *adverse effects*), 2,492 (29.8%) were suicides, and 302 (3.6%) homicides. A further four cases were the result of Legal intervention/ war, and, in 96 cases (1.1%), the intent was undetermined.

Age-standardised rates appear to have risen slightly from 1998 to 1999 (Table 3.1). However, when rates for 1998 are adjusted to allow for the effect of the introduction of ICD-10, they become very similar to the rates for 1999.

Australian injury deaths registered in 1999 are arranged in Table 3.2 according to a matrix in which the columns represent types of involvement of human *intent* in the occurrence of injury deaths, and the rows represent some of the more important ways in which injury comes about (the latter are referred to as *mechanisms* here). This type of presentation reveals (for example) the breakdown of firearm deaths according to the role of human intent, and the breakdown of suicide deaths according to the means of death.

The matrix is produced by aggregating ICD 'External Cause' categories according to a scheme that was first published in the USA in 1997 (Centers for Disease Control and Prevention 1997). That version of the matrix was defined in terms of ICD-9. A preliminary version of a version that is defined in terms of ICD-10, published in June 2001, was used to produce Table 3.2 (Fingerhut 2001).

Case counts cannot be determined for the shaded cells in Table 3.2 because the ICD 'External Causes' classification does not allow cases with the necessary combination of *intent* and *mechanism* to be distinguished.

Despite its limitations, the matrix is a useful summary presentation of injury mortality data. If adopted widely, it will facilitate comparison of the injury experience of nations, states and other areas.

Table 3.2: Injury deaths by intent and mechanism, Australia, 1999 (case numbers)

	Intent

	Unintentional	Suicide	Homicide	Undetermined	Other	Total
Cut/pierce	10	43	90	..		144
Drowning	278	37	..	5		323
Fall	520	98		10		628
Fire, hot objects	101	24	6	..		134
<i>Fire/flame</i>	92	24	6	..		125
<i>Hot object/substance</i>	9					9
Firearm	28	269	50	..	4	353
Machinery	22					22
All Transportation	2,011	18	..			2,030
<i>Motor vehicle traffic:</i>	1,722					1,722
<i>Occupant</i>	1,113					1,113
<i>Motorcyclist</i>	173					173
<i>Pedal cyclist</i>	35					35
<i>Pedestrian</i>	302					302
<i>Unspecified</i>	99					99
<i>Pedal cyclist, other</i>	9					9
<i>Pedestrian, other</i>	71					71
<i>Other land transport</i>	102					102
<i>Other Transport</i>	107					107
Natural /environmental	53					53
Poisoning	1,088	873	7	59		2,027
Struck by or against	41		67			108
Suffocation ^(a)	210	1,028	34	..		1,275
Other specified, classifiable	63	73	7	..		145
Other specified, nec	80	21	6	..		109
Unspecified	860	8	31	9		908
Complications of medical/surgical care	102					102
<i>Adverse effects of drugs, etc.</i>	18					18
<i>Misadventures during care</i>	84					84
All Injury	5,467	2,492	302	96	4	8,361

.. Case counts are not shown where the cell count is less than 4.

(a) Includes hanging.

Note: The shaded cells in Table 3.2 represent combinations of mechanism and intent that cannot be distinguished in the ICD-10 External Cause classification.

3.3 Age and sex distribution

Injury and poisoning is the leading cause of death for persons aged 1–44 years. It accounted for 48% (n=4,362) of all deaths in this age group (n=9,117) in 1998 and 51% (n=4,591) of all deaths in this age group (n=8,943) in 1999.

Male rates are generally higher than female rates. The ratio between male and female age-adjusted rates was 2.7 in 1999. The ratio fluctuates from year to year, and has tended to rise somewhat over the period since 1979 (e.g. the ratio was 2.3 in 1979).

Rates for both sexes were lowest in childhood and highest at ages 75 and older (Figure 3.1). Rates for males were higher than rates for females at all ages. Male rates were about four times higher than female rates at ages 20–34 years. The rate ratio was lowest for young children and in the oldest group (under 1.5).

Young adults, in the age range 20–39 years, accounted for 38% of all injury deaths. Young males, alone, accounted for more than 30% of the total (n=2,543).

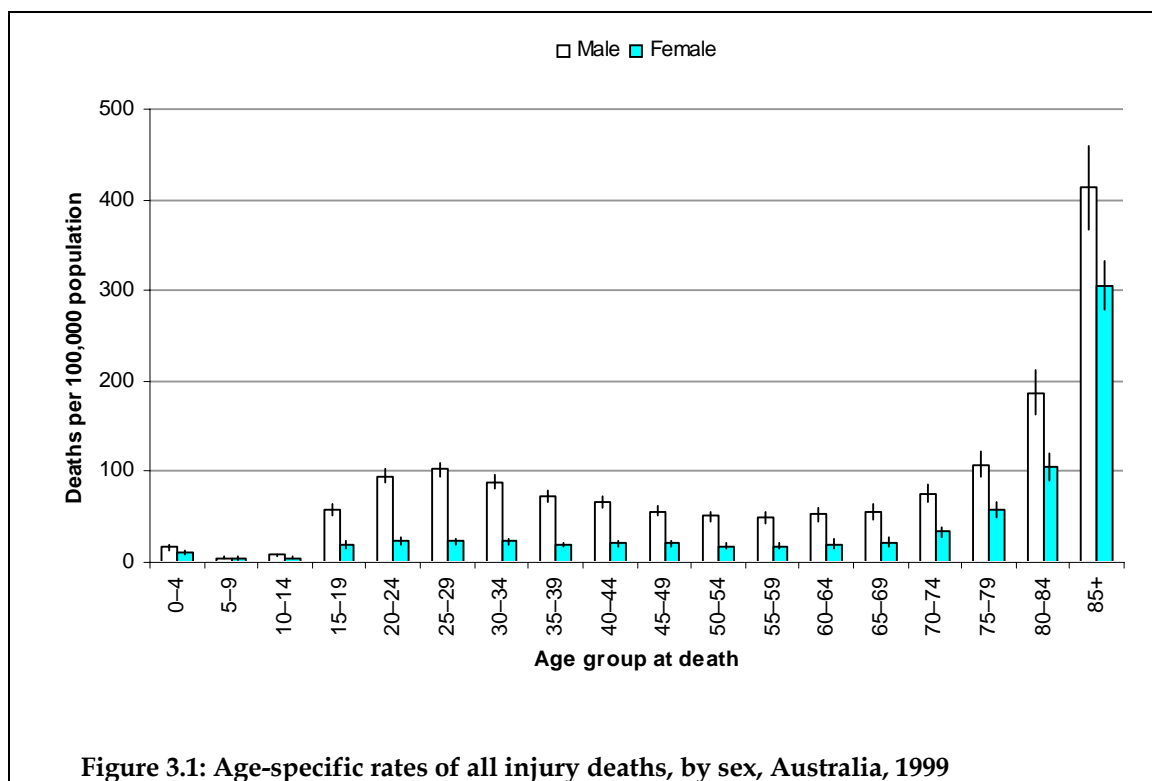


Figure 3.1: Age-specific rates of all injury deaths, by sex, Australia, 1999

3.4 Trends in death rates

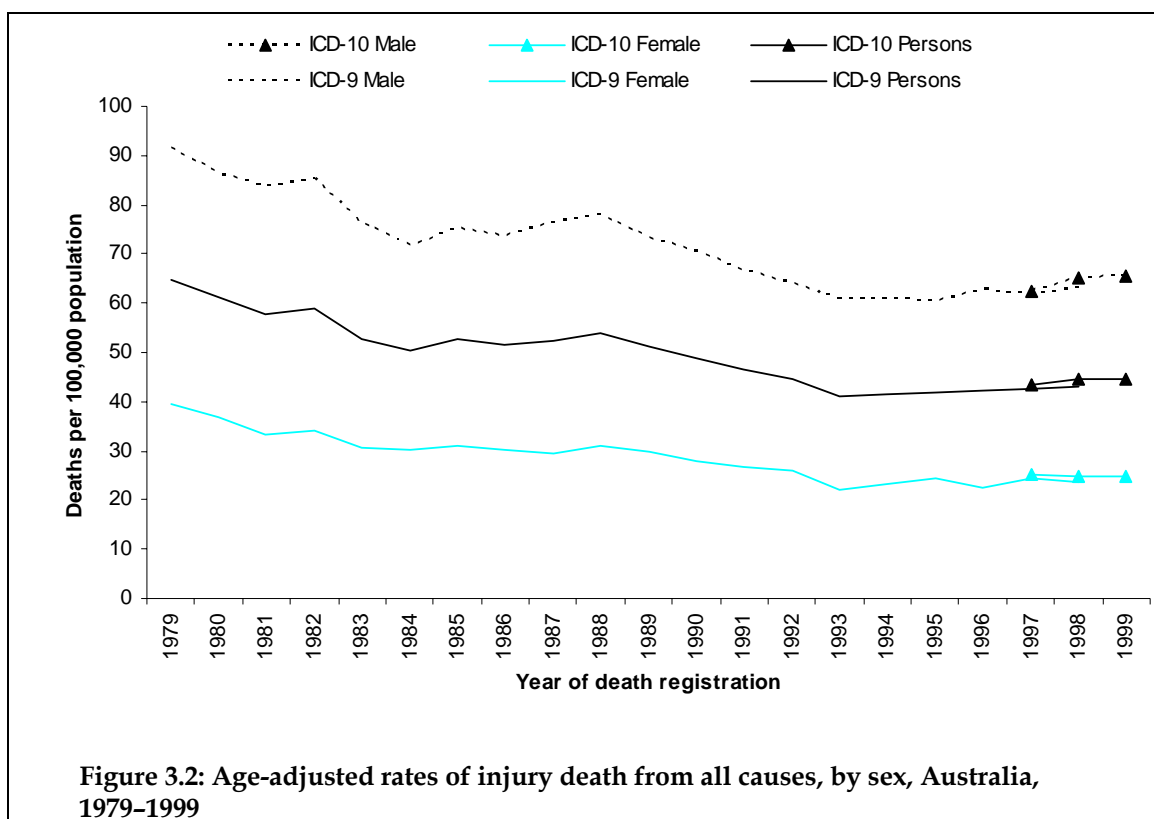
Figure 3.2 shows age adjusted injury mortality rates for males, females and persons for the period 1979–1999. While male and female injury death rates declined during the period as a whole, rates did not continue to drop after the mid-1990s, and there are signs of a small increase in recent years for males.

Between 1979 and 1999, overall age-standardised death rates due to injury decreased by 31.1%, whereas the ‘all-causes’ death rate declined by 48.3%. During the middle and late 1990s, when injury death rates remained more or less static, rates for deaths from all-causes continued to decline by 1–2% annually.

The introduction of ICD-10 produced a break in series. As discussed in Chapter 2 and Section 3.2, analysis of dual-coded data for 1998 suggests that the net effect of the change in classification is an increase of 3.4% in the number of deaths coded as being due to External Causes of injury and poisoning.

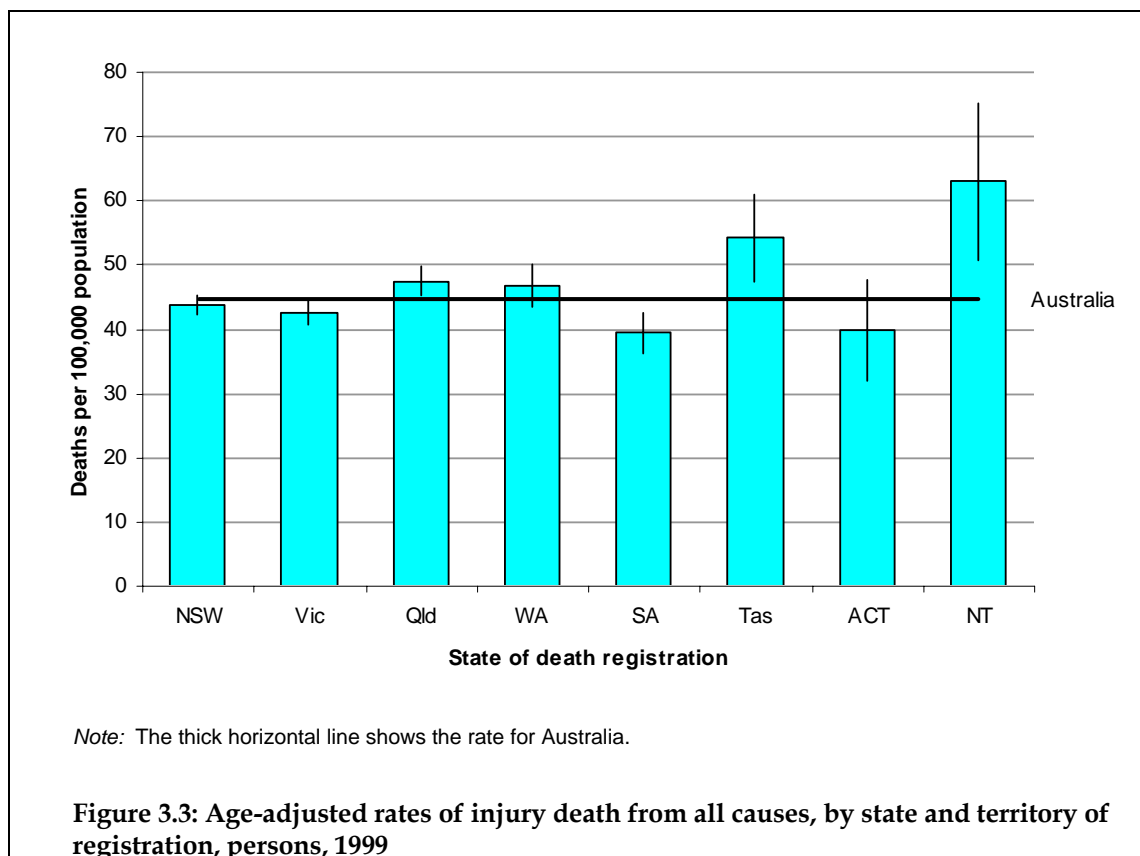
As noted above, Table 3.1 includes rows showing age-adjusted injury mortality rates for 1998 with and without allowance for this comparability factor. The 1998 rates that allow for the comparability factor are very similar to the 1999 rates.

The effect of the change in classification has also been allowed for in Figure 3.2. In this case, the values for 1999 in the series lines have been multiplied by the inverse of the comparability factor. The values for 1999 without this adjustment are shown by markers.



3.5 State and territory differences

Age-adjusted injury mortality rates for all of the large population states were quite similar in 1999, being a little above or below 40 per 100,000 population. As in other recent years, the rate for the Northern Territory was the highest among the states and territories, and the rate for South Australia was the lowest. Considering only the 1999 data, only the rates for Tasmania and the Northern Territory were significantly above the overall rate for Australia. South Australia had a rate significantly below the overall rate.

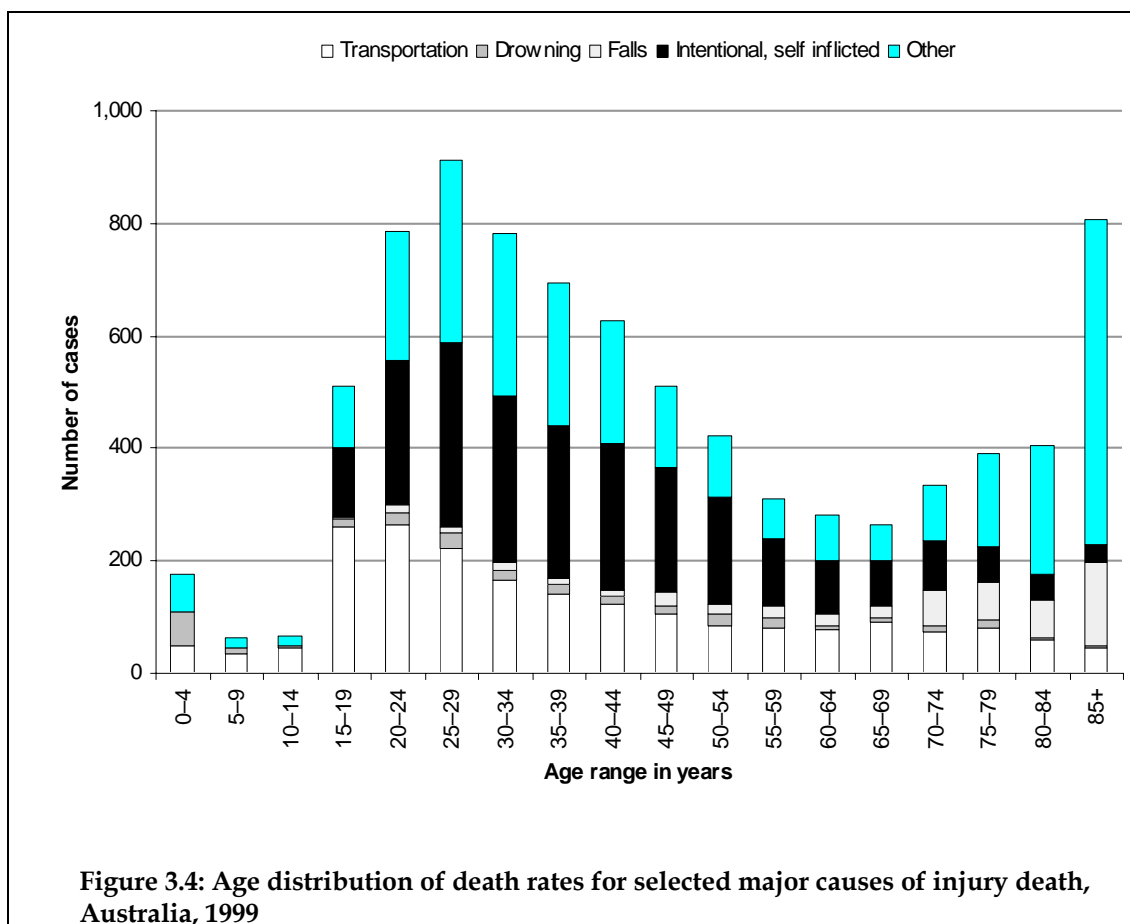


3.6 Major types of injury deaths

In 1999, of the 8,361 injury deaths registered, 30% were the result of suicide (n=2,492) and 24% were the result of transport related injuries (n=2,011). Of the 7,946 injury deaths registered in 1998, 34% were the result of suicide (n=2,683) and 25% were the result of transport related injuries (n=1,958).

Particular External Causes were prominent among injury deaths at particular ages (Figure 3.4). Drowning deaths were most prominent in very early childhood, the impact of suicide and transport emerges in the adolescent years and continues until old age. Falls account for a large proportion of deaths among the elderly. (Note that Falls are defined here according to the definition shown in row 5a in Table 2.3.)

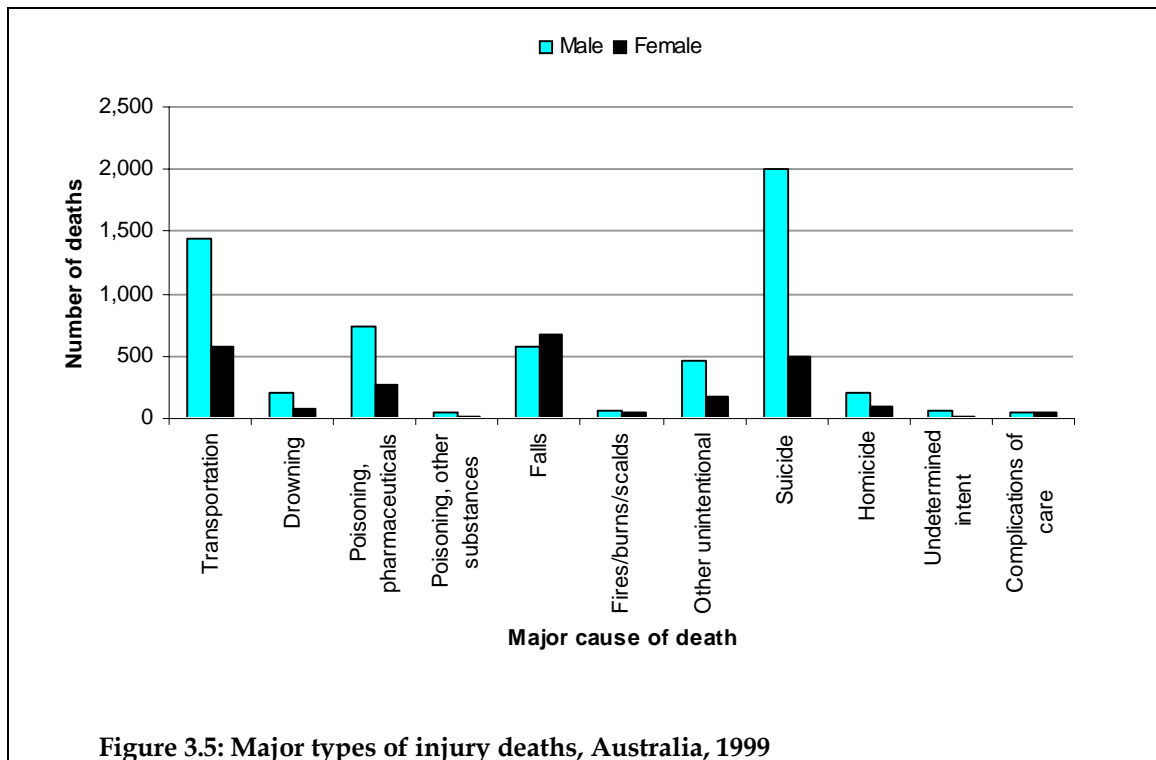
Homicide (not distinguished in Figure 3.4) accounted for a relatively small and constant proportion of injury deaths at all age groups from childhood to late middle age.

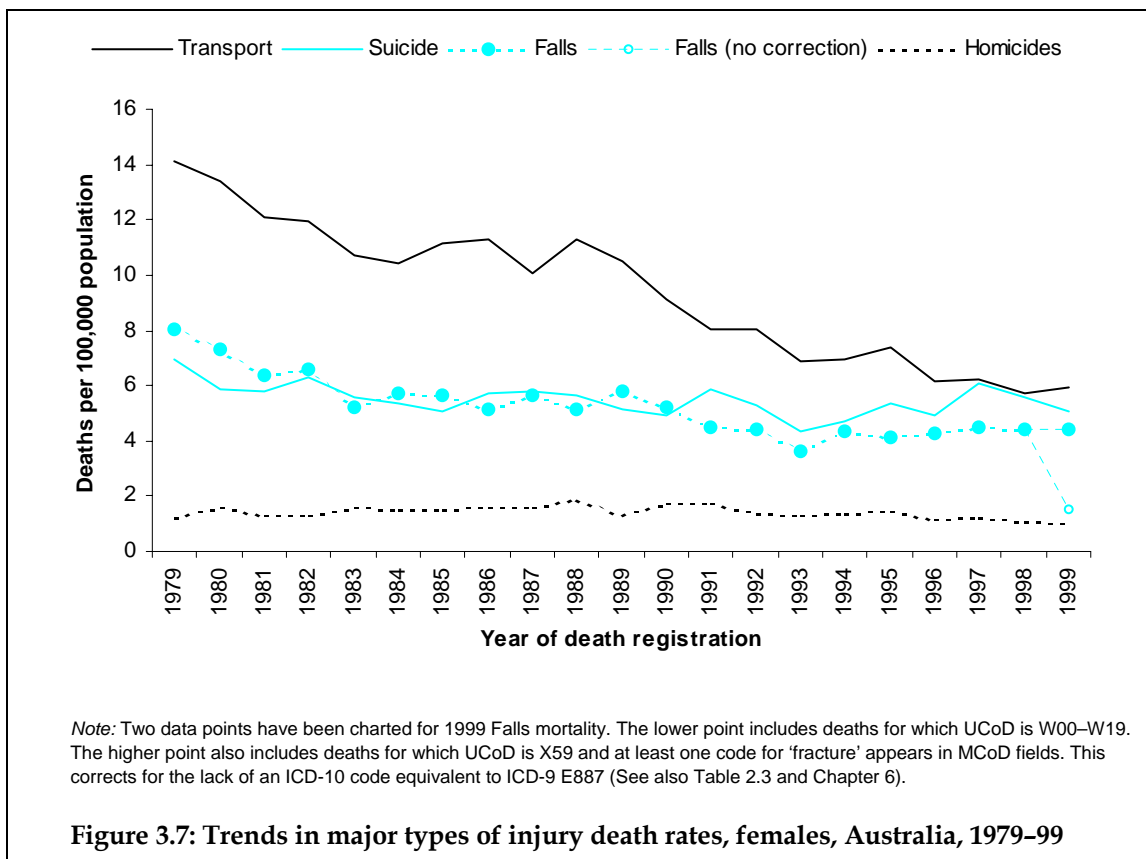
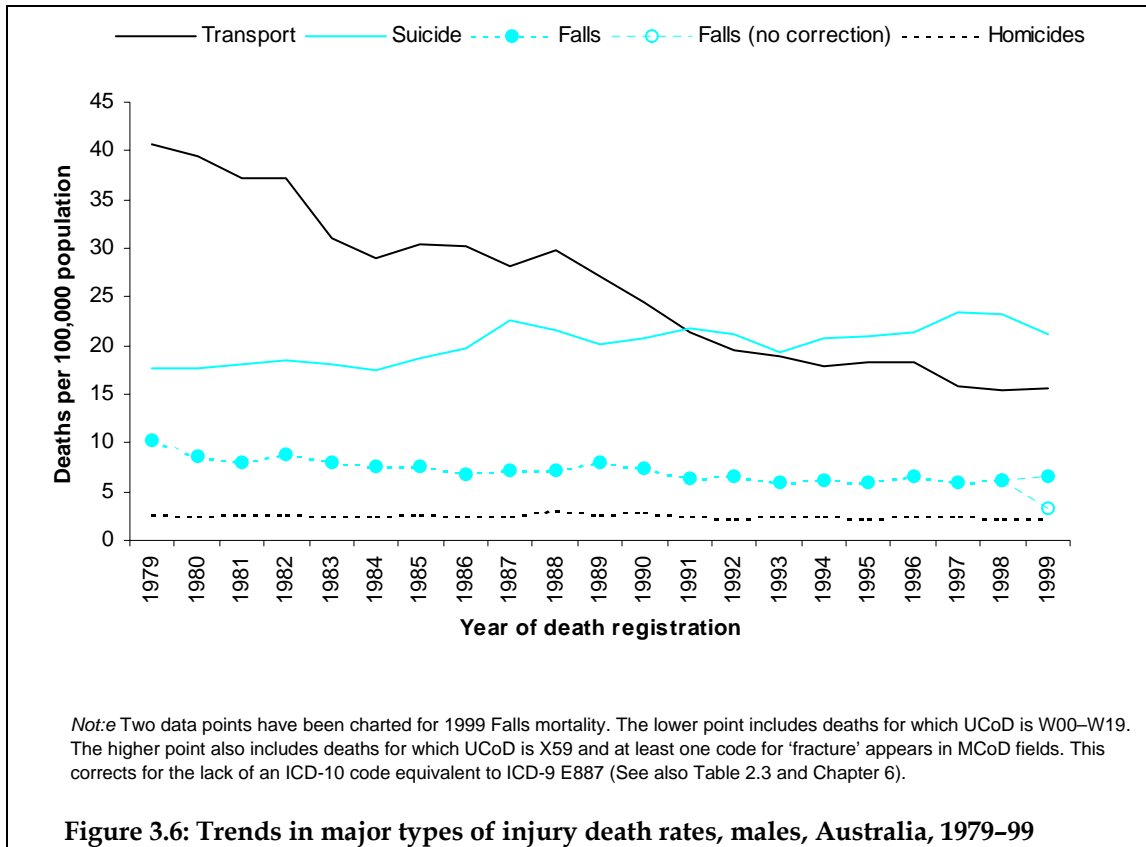


Total numbers of male and female injury deaths registered in 1999 are shown in Figure 3.5, separately for the main types of External Cause described in this report. This figure shows the prominence among all injury deaths of male suicide, road death and drug poisoning, and falls by both males and females. (Once again, the 'Falls' category is defined as in row 5a of Table 2.3.)

Trends since 1979 in age-adjusted rates for common types of injury deaths are shown in Figures 3.6 (males) and 3.7 (females). Suicide displaced transport-related death as the most common type of injury death for males in the early 1990s. Female rates for these causes had converged by the end of the decade.

The major types of injury deaths are described in more detail in Chapters 4 to 11 of this report.





3.7 Associated factors: place and activity

Included for the first time in data on deaths registered in 1999 are codes to describe the *Place* where a fatal injury occurred and the *Activity* being undertaken at the time of injury.

According to standard ICD-10 coding rules, *Activity codes* are applicable within the range of External Cause categories V01–Y34. According to this criterion, 8,165 injury deaths registered in 1999 were eligible to receive an *Activity* code. In 93% of these cases, the type of *Activity* being undertaken at the time of injury was recorded as unspecified. Only in 474 (6%) of the in-range deaths was *Activity* recorded as being one of the five types for which relatively specific categories are provided in the classification.

Under ICD-10 coding rules, External Cause codes within the range W00–Y34 (with the exception of Y06.- and Y07.-) can attract a *Place* code. In 1999, 6,148 injury deaths had an External Cause in this range recorded as the UCoD.

In 54% of these cases, the type of *Place* of injury occurrence was recorded as unspecified. A type of *Place* in one of the eight more specific categories provided in the classification was recorded for 2,119 (34%) of these deaths (Table 3.3). Place data are summarised in Table 3.3 and in subsequent chapters. Activity data are generally not stated in this report, due to the very small proportion of cases for which an informative value was provided.

Table 3.3: Place of Occurrence codes recorded for injury deaths registered in Australia, 1999

Place	Persons	%
Home	1,602	26.1
Residential institution	103	1.7
School, other institution, publicly administered area	61	1.0
Sport, athletics area	17	0.3
Street, highway	113	1.8
Trade, service area	111	1.8
Industrial, construction area	66	1.1
Farm	46	0.7
Other specified	734	11.9
Unspecified	3,295	53.6
Total	6,148	100.0

* Restricted to deaths with UCoD code in range for which ICD specifies inclusion of Place code (W00–Y34, except Y06 & Y07).

4 Transport deaths, Australia

(ICD-9 E800–E848)

(ICD-10 V01–V99)

Table 4.1: Key indicators for transport deaths, Australia

Indicator	1998 ^(a)			1999 ^(b)		
	Males	Females	Persons	Males	Females	Persons
Cases	1,411	547	1,958	1,441	570	2,011
Percentage of all injury deaths	25.1%	23.5%	24.6%	24.6%	22.9%	24.1%
Crude rate per 100,000 population	15.2	5.8	10.5	15.3	6.0	10.6
Age standardised rate per 100,000 population	15.3	5.8	10.5	15.6	5.9	10.6
Age standardised rate per 100,000 population (CF adjusted)*	15.5	5.8	10.6	n/a	n/a	n/a
Average years potential life lost (YPLL) before age 75 years	38	33	36	37	34	36

* Standardised rates based on ICD-9, multiplied by the CF (1.014), to improve comparability with 1999 rates based on ICD-10 (see 2.1.2).

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E800–E848.

(b) Deaths registered in 1999 for which UCoD code is ICD-10 V01–V99.

This section covers all transport deaths, including motor vehicle traffic and motor vehicle non-traffic, railway, water and air transport. It does not include transport-related injury deaths that were registered as intentional.

4.1 Transition to ICD-10

Analysis of dual-coded data for 1998 showed an ICD-10/ICD-9 comparability factor for *All Transport-related* deaths of about 1.01 (see Chapter 2). This estimate is fairly close to one derived from similar research in the US, the authors of which found a factor of 1.00 (Anderson et al. 2001). The small apparent difference in rates of transport injury mortality between 1998–1999 becomes even smaller when allowance is made for this factor (Table 4.1).

Anderson et al., found that the introduction of ICD-10 had the potential to produce a larger break in comparability for some subsets of transport cases. Under ICD-9 coding rules, certain cases in which the involvement of a *motor* vehicle is not stated explicitly were, nevertheless, assumed to involve a motor vehicle. ICD-10 rules do not embody this assumption. Anderson et al., found a 15% reduction in the category *Motor vehicle accidents* due to this change (the cases were assigned to the category *Other land transport accidents*). The response for mortality coding in the USA was to change ICD-10 coding rules to retain the assumption that applied under ICD-9.

4.2 Overview

Table 4.2: Major mechanism of injury for transport deaths, Australia, 1999

Major mechanism of injury	Description	Males	Females	Persons
Motor vehicle traffic	Fatalities due to on-road accidents in which a motor vehicle was involved.	1,202	520	1,722
Other Pedestrian and pedal cycle	Land transport related fatal accidents in which no motor vehicle was involved (on-road or not).	67	13	80
Other land transport	Fatalities due to off-road accidents in which a motor vehicle was involved.	83	19	102
Other Transport	Fatalities related to air or water transport, as well as other specified transport (e.g. cable cars and ski lifts), and unspecified transport.	89	18	107
Group Total		1,441	570	2,011

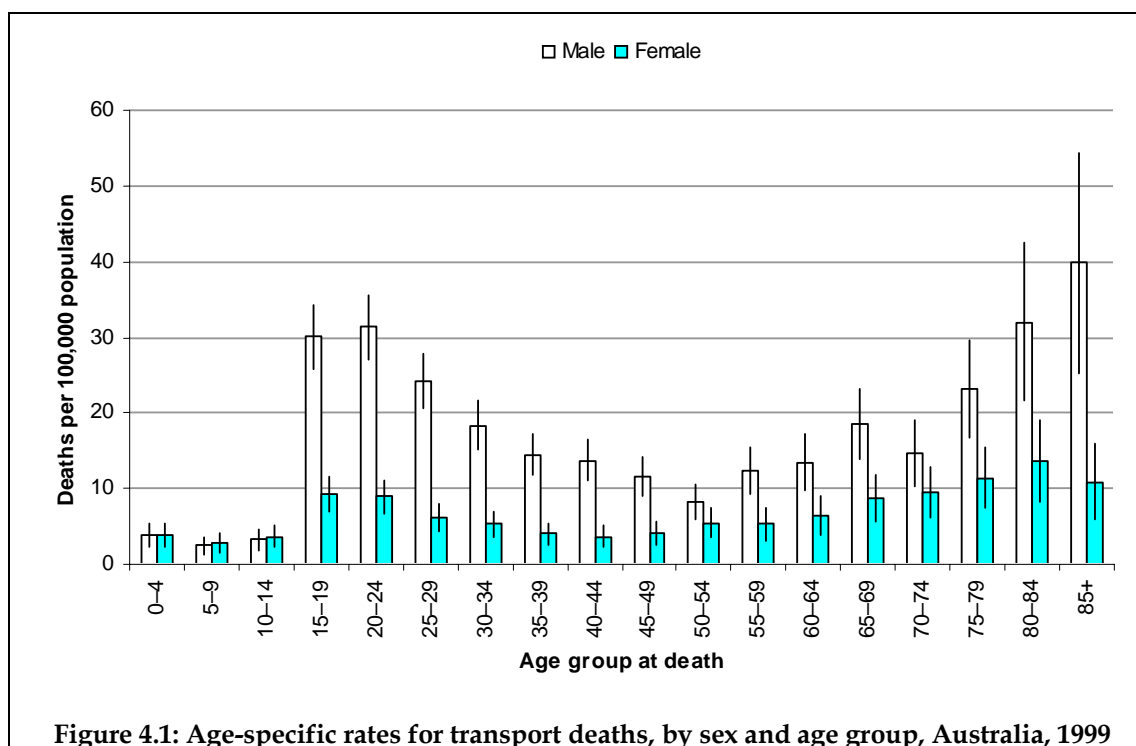
4.3 Age and sex distribution

Males accounted for 72% (n=1,441) of all transport-related deaths in 1999.

Males in the 15–29 year age range accounted for 29% (n=584) of all transport-related deaths in 1999 and females in the same age range accounted for a further 8% (n=162).

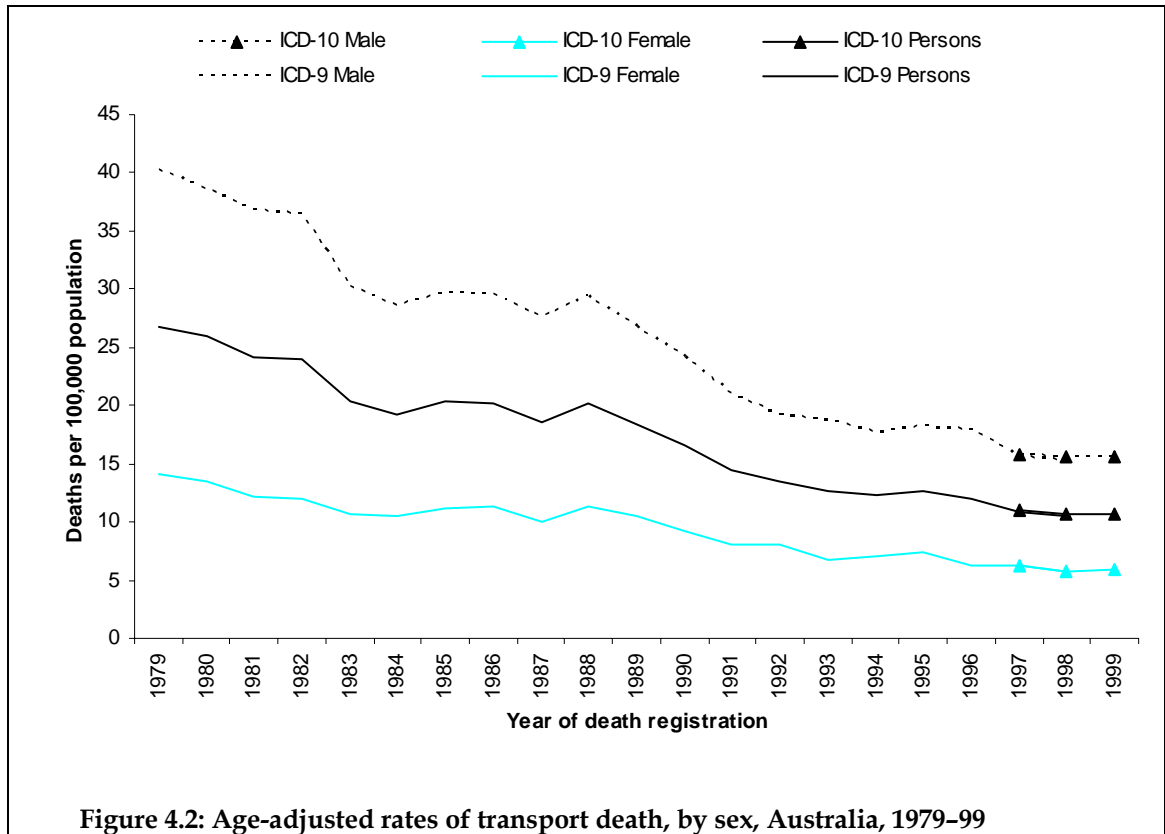
Adolescents, young adults and the elderly had the highest transport-related death rates.

Male age-specific rates were significantly higher than female rates in the ranges 15–49 years, 55–69 years, and at 75 years and over.



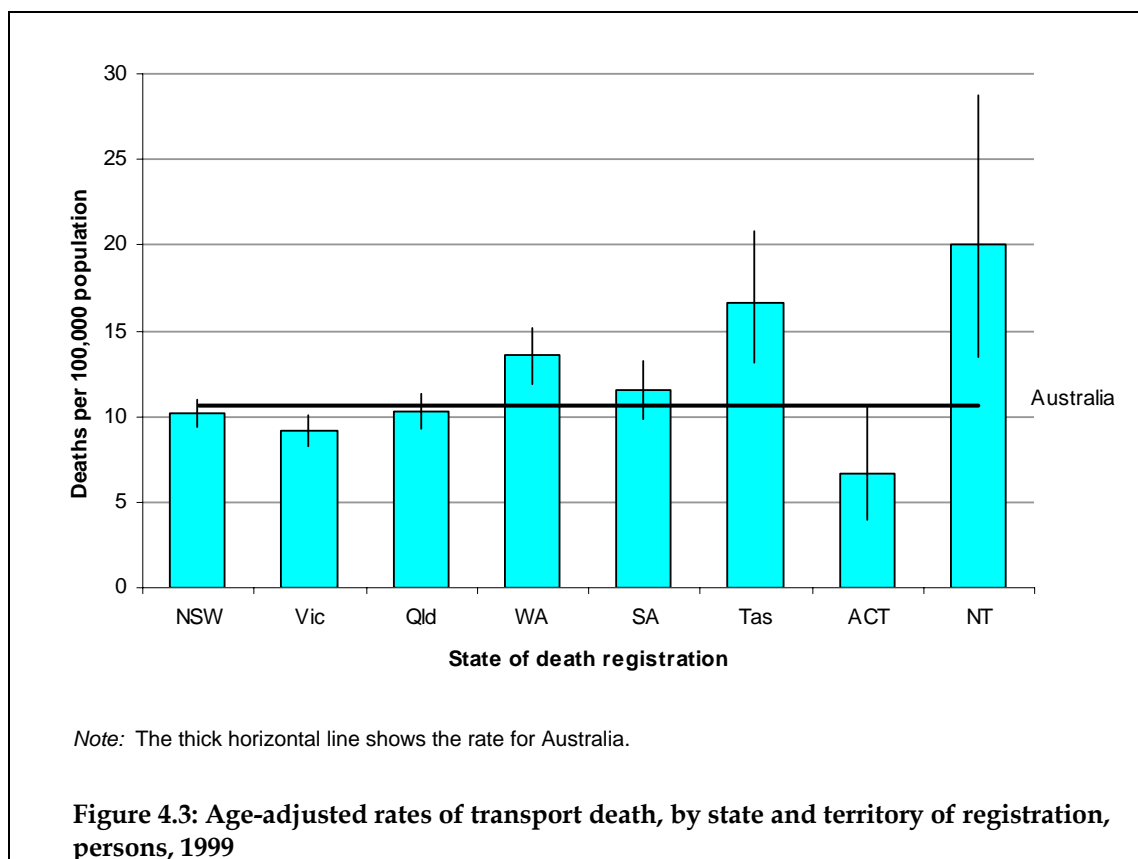
4.4 Trends in death rates

Overall age-adjusted rates for persons fell by 61% in the period 1979–1999 (Figure 4.2). The fall in rates slowed in the 1990s, and rates have changed little in the latest few years shown. There was minimal change in age-adjusted transport related death rates from 1998 to 1999 after allowing for the effect of the change from ICD-9 to ICD-10.



4.5 State and territory differences

Between 1998 and 1999, the most notable changes in relation to state and territory rates of transport related deaths were a decline of 51% in the age-adjusted rate for the Northern Territory – from 40.8 (n=77) in 1998 to 20.1 (n=42) and a rise for Tasmania – from 9.3 (n=11) in 1998 to 16.7 (n=25). However, such fluctuations should be interpreted with caution as they may reflect the comparatively small populations and case numbers in these two jurisdictions.



4.6 Transport deaths: motor vehicle traffic

(1979–98 data comprise cases coded to External Cause codes ICD-9: E810–E819)

(1999 data comprise cases coded to External Cause codes ICD-10: *Occupants: V30–V39 (.4-.9), V40–V49 (.4-.9), V50–V59 (.4-.9), V60–V69 (.4-.9), V70–V79 (.4-.9), V81.1, V82.1, V83–V86 (.0-.3), Motorcyclists: V20–V28 (.3-.9), V29 (.4-.9), Pedal cyclists: V12–V14 (.3-.9), V19 (.4-.6), Pedestrians: V02–V04 (.1, .9), V09.2, Other: V80 (.3-.5), Unspecified: V87 (.0-.8), V89.2.*

Table 4.3: Key indicators for road traffic deaths, Australia

Indicator	1998 ^(a)			1999 ^(b)		
	Males	Females	Persons	Males	Females	Persons
Cases	1,223	506	1,729	1,202	520	1,722
Percentage of all injury deaths	15.4	6.4	21.8	20.5	20.9	20.6
Crude rate per 100,000 population	13.2	5.4	9.2	12.8	5.5	9.1
Age standardised rate per 100,000 population	13.3	5.3	9.2	13.0	5.4	9.1
Age standardised rate per 100,000 population (CF adjusted)*	13.1	5.3	9.1	n/a	n/a	n/a
Average years potential life lost (YPLL) before age 75 years	38	32	36	37	33	36

* Standardised rates based on ICD-9, multiplied by the CF (0.987), to improve comparability with 1999 rates based on ICD-10 (see 2.1.2).

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E810–E819.

(b) Deaths registered in 1999 for which UCoD code is an ICD-10 code in the ranges stated above.

This section covers fatalities due to all on-road accidents in which a motor vehicle was involved.

The 1,722 motor vehicle traffic deaths in 1999 were a decrease of 0.4% on the 1,729 motor vehicle traffic deaths recorded in 1998. The age-adjusted road traffic death rate fell by 1% from 9.2 to 9.1 deaths per 100,000 population (Table 4.3).

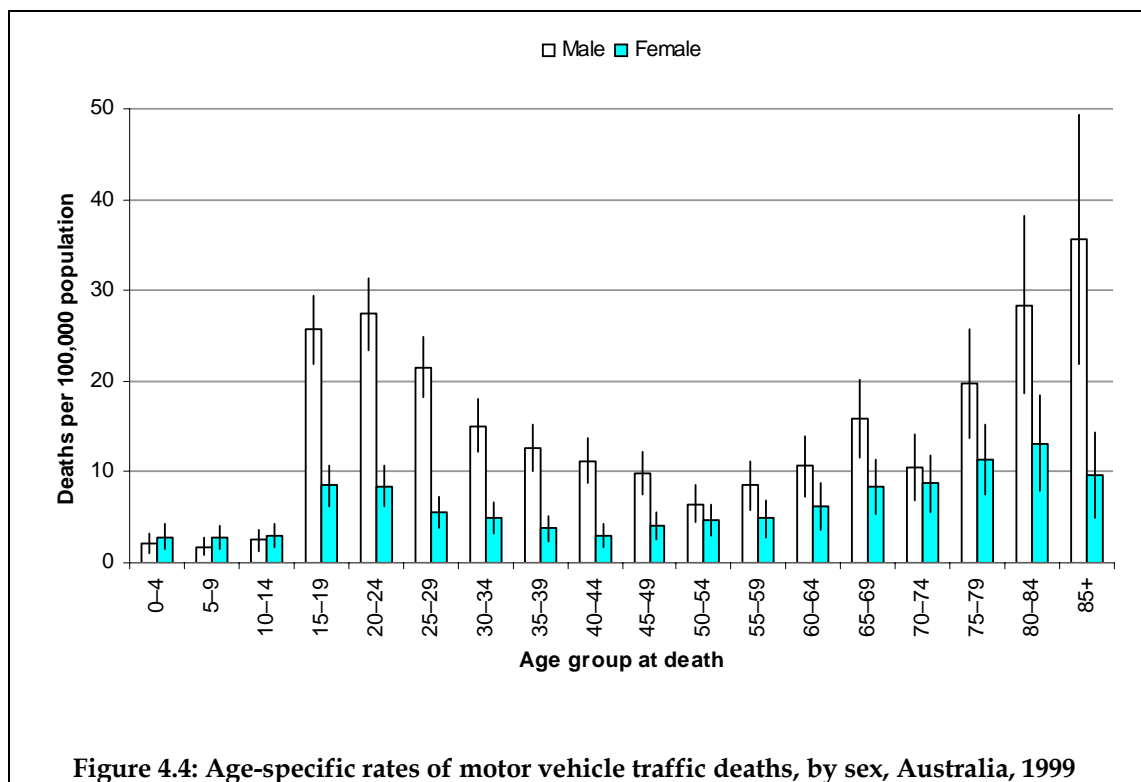
4.6.1 Age and sex distribution

Males made up 70% (n=1,202) of road traffic deaths in 1999.

Males aged 15–24 years and 75 years and older had the highest rates of motor vehicle traffic death in 1999.

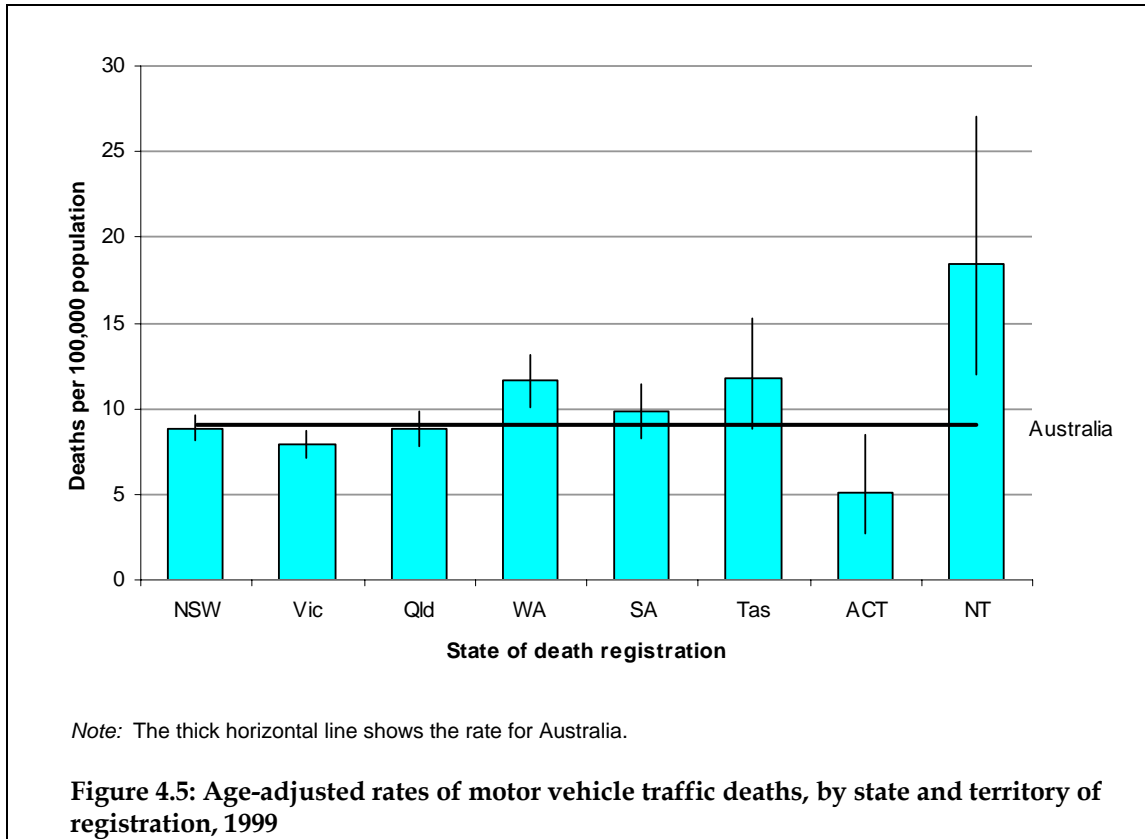
Males in the 15–24 year age range accounted for 27% (n=460) of all motor vehicle traffic deaths in 1999 and represented a decline of 5% over 1998.

Children and adolescents under the age of 15 years accounted for a further 98 motor vehicle traffic deaths in 1999, most as motor vehicle passengers (n=49) and pedestrians (n=26). Deaths in this age group represented 6% of all motor vehicle traffic deaths.



4.6.2 State and territory differences

In 1999, the Australian Capital Territory had the lowest rate of motor vehicle traffic deaths and the Northern Territory had the highest. There was a statistically significant difference between both these rates and that for Australia as a whole.



4.6.3 Trends in death rates

There has been a steady downward trend in age adjusted rates of motor vehicle traffic death between 1979 and 1999 (The rate declined from 24.4 per 100,000 population in 1979 to 9.1 per 100,000 population in 1999.)

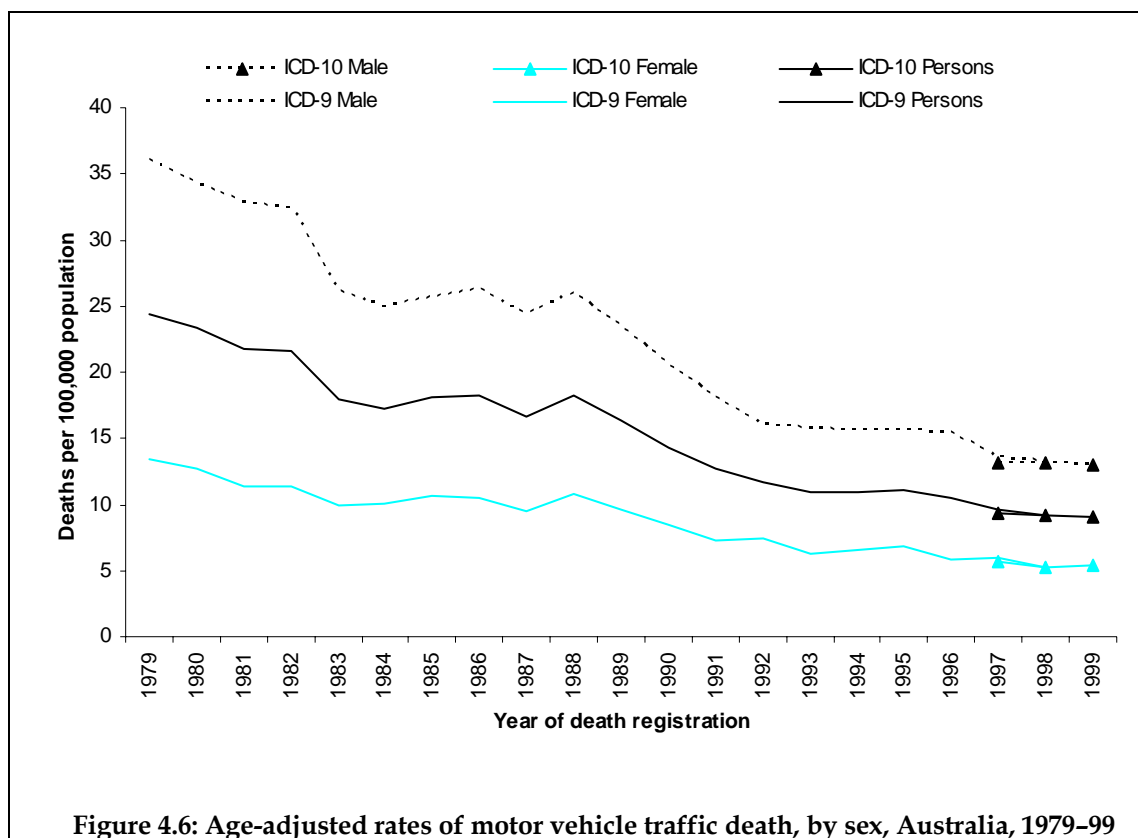


Figure 4.6: Age-adjusted rates of motor vehicle traffic death, by sex, Australia, 1979-99

4.6.4 Road user type

Of the 1,722 motor vehicle traffic deaths in 1999, 65% (n=1,113) were motor vehicle occupants. In the same year, pedestrians accounted for 18% of motor vehicle traffic deaths (n=302); motorcyclists 10% (n=173); and pedal cyclists 2% (n=35). The type of road user was not specified in 6% of cases (Table 4.4).

Table 4.4: Motor vehicle traffic deaths, by road user type and sex, Australia, 1999

Road user type	Males	Females	Persons
Occupant	734	379	1,113
Pedestrian	209	93	302
Motorcyclist	162	11	173
Pedal cyclist	29	6	35
Unspecified	68	31	99
Total	1,202	520	1,722

4.6.5 Occupant type

Drivers represented the largest group of vehicle occupant deaths 66% (n=732). Three times as many drivers were male (Table 4.5).

Table 4.5: Motor vehicle occupant deaths, by sex and type of occupant, Australia, 1999

Occupant type	Males	Females	Persons
Driver	549	183	732
Passenger	163	186	349
Unspecified occupant	22	10	32
Total	734	379	1,113

4.6.6 Vehicle type

By far the largest proportion of vehicle occupants died while travelling in a car. The involvement of (mainly male) occupants of heavy transport vehicles and pickup trucks or vans was also very evident (Table 4.6).

Table 4.6: Motor vehicle occupant deaths, by sex and type of vehicle occupied, Australia, 1999

Type of vehicle	Male	Female	Persons
Car	647	366	1,013
Heavy transport vehicle	44	6	50
Pickup truck or van	30	6	36
Bus	..	0	..
Railway train or railway vehicle	..	0	..
Special agricultural vehicle	4	..	5
Special construction vehicle	..	0	..
All-terrain or off-road vehicle	..	0	..
3-wheeled vehicle	..	0	..
Total	734	379	1,113

.. Case counts are not shown where the cell count is less than 4.

5 Suicide deaths, Australia

(ICD-9 E950–E959)

(ICD-10 X60–X84)

Table 5.1: Key indicators for suicide deaths, Australia

Indicator	1998 ^(a)			1999 ^(b)		
	Males	Females	Persons	Males	Females	Persons
Cases	2,150	533	2,683	2,002	490	2,492
Percentage of all injury deaths	38.3%	22.9%	33.8%	34.1%	19.7%	29.8%
Crude rate per 100,000 population	23.2	5.6	14.3	21.3	5.1	13.2
Age standardised rate per 100,000 population*	23.2	5.6	14.3	21.6	5.1	13.2
Average years potential life lost (YPLL) before age 75 years	35	32	34	33	33	33

* ICD-9 to ICD-10 comparability factor=1.00 (see 2.1.2)

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E950–E959.

(b) Deaths registered in 1999 for which UCoD code is ICD-10 X60–X84.

5.1 Transition to ICD-10

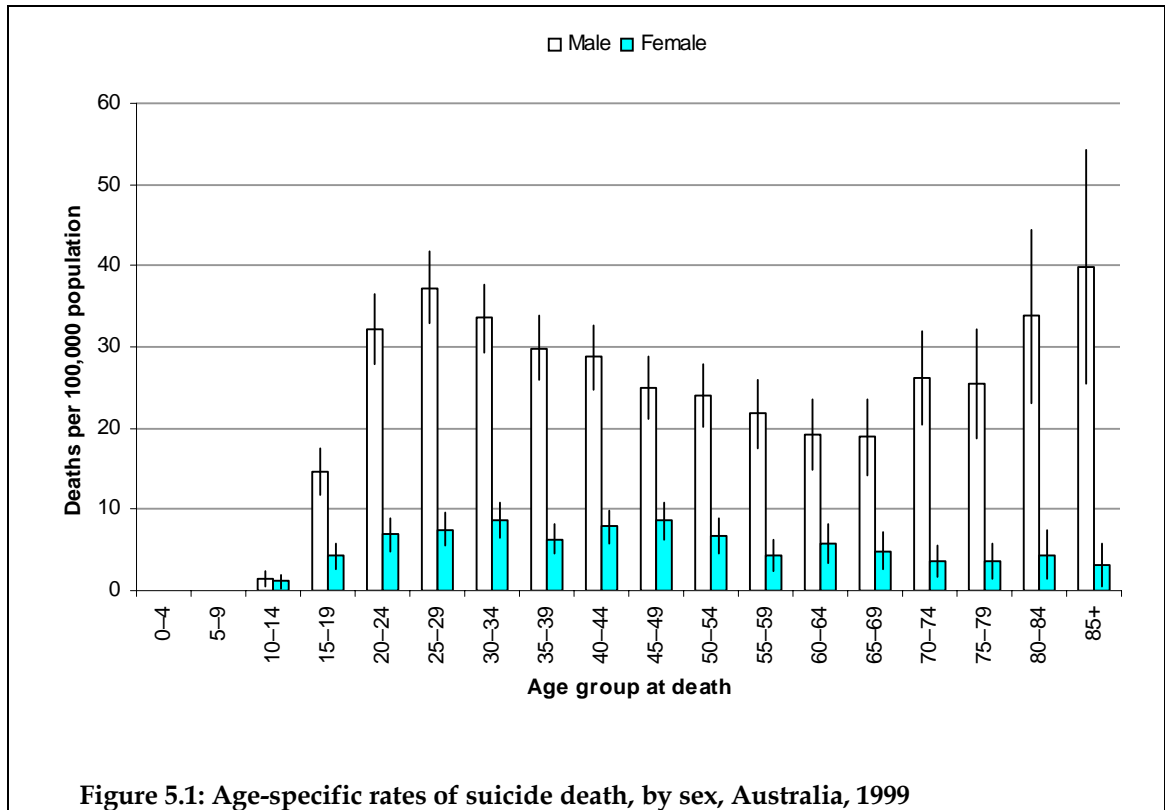
The transition from ICD-9 to ICD-10 does not appear to have affected the comparability of data for suicide deaths in Australia. Analysis of dual-coded data for 1998 showed an ICD-9/ICD-10 comparability factor for *Suicide* death of 1.00 (see Chapter 2). Independent confirmation of this estimate comes from similar research undertaken in the USA (Anderson et al. 2001) which also found a comparability factor for *Suicide* of 1.00.

5.2 Overview

2,492 suicide deaths were registered in 1999, 7% fewer than the 2,683 deaths registered from this cause in 1998. Suicide was responsible for about 30% of all injury deaths in 1999, at an age-adjusted rate of 13.2 deaths per 100,000. Suicide accounted for more deaths than transport related accidents.

5.3 Age and sex distribution

Males continued to have higher rates than females in all age groups, with the overall male age-adjusted rate in 1999 of 21.6 deaths per 100,000 being around four times the female rate of 5.1 deaths per 100,000.



5.4 Trends in death rates

The rate of suicide registered in 1999 was about 10% lower than in 1997. Considered in terms of date of death (rather than date of death registration), a sharp peak in suicide deaths occurred around the end of 1997. This raised the number of suicide deaths registered in the calendar years 1997 and 1998. (2,824 suicide deaths occurred in the year to the end of July 1998, the largest number on record for a 12-month period.) It is not yet clear whether the lower rate seen in 1999 is a short-term fluctuation or a more substantial change in trend.

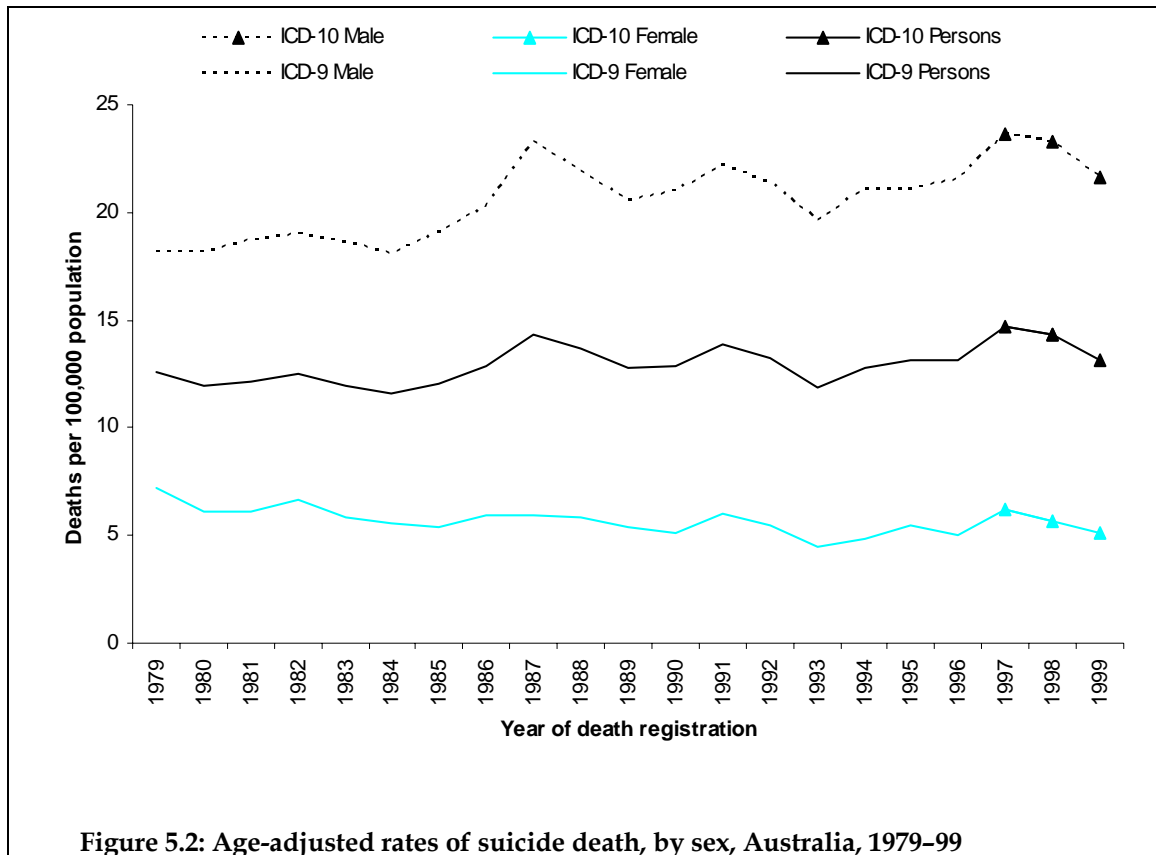
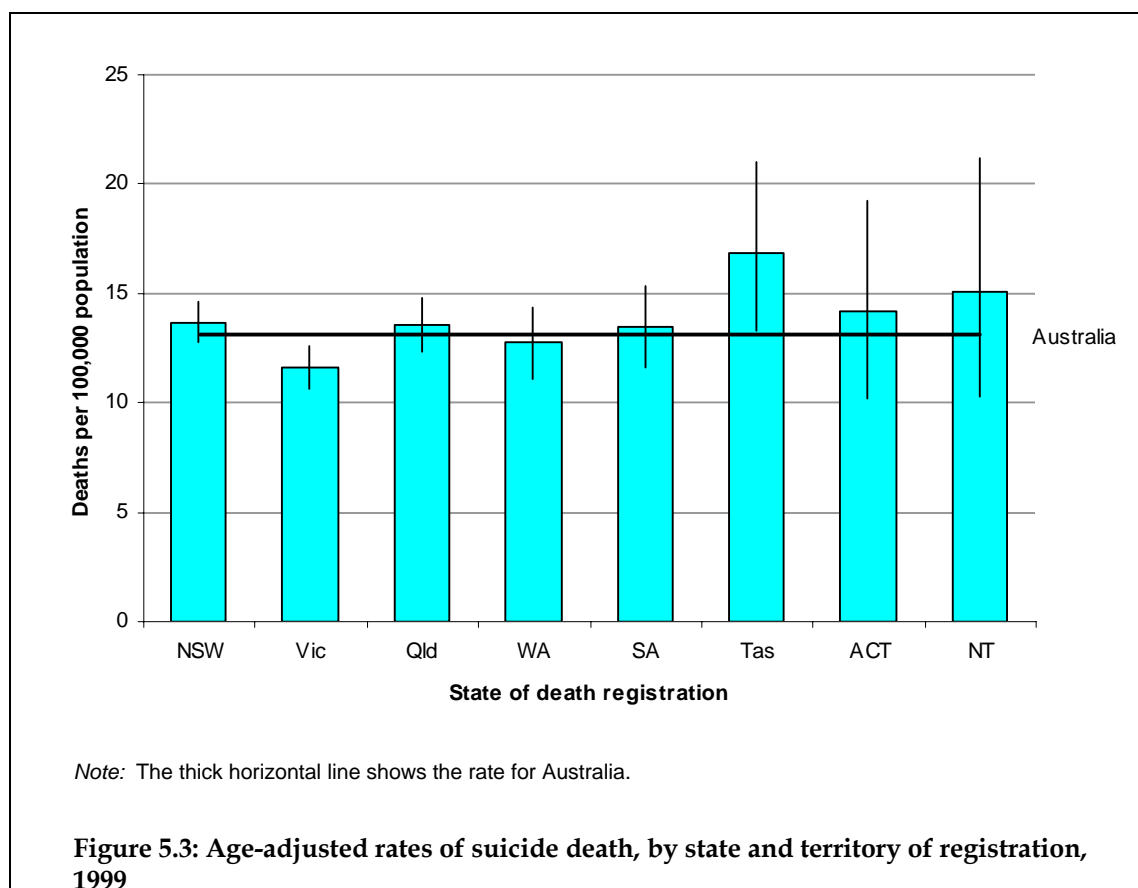


Figure 5.2: Age-adjusted rates of suicide death, by sex, Australia, 1979-99

5.5 State and territory differences

There was not much difference between states and territories in 1999 with respect to the age-adjusted rate of suicide deaths. The rate for Victoria was lower than the national rate by an amount that reached statistical significance (95%). Rates for all other jurisdictions were within 95% confidence limits of the national rate.



5.6 Associated factors

5.6.1 Methods used

The most frequently coded mechanism of suicide was hanging, strangulation and suffocation (Table 5.2). ICD-10 provides category X70 *Intentional self-harm by hanging, strangulation and suffocation* for this cause of death. Unlike ICD-9, it does not provide a sub-category specifically for hanging. Under ICD-9, the great majority of suicide deaths by suffocation were attributed to hanging (97% in 1998).

The second and third most frequently recorded types of suicide method in 1999 were poisoning and firearms. Further details of these methods are provided in Tables 5.3 and 5.4.

The proportion of male and female suicide deaths differed considerably between the methods shown in Table 5.2. Only 5% of the persons who died by means of shooting suicide were females, whereas the number of males and females were about equal for two less common methods of suicide, drowning and cases involving fire or flame.

Table 5.2: Methods of suicide, Australia, 1999

Major mechanism	Male	Female	Persons
Hanging, strangulation and suffocation	868	160	1,028
Poisoning	650	223	873
Firearm	256	13	269
Fall	73	25	98
Cut/pierce	30	13	43
Drowning	18	19	37
All Transportation	16	..	18
Fire/flame	11	13	24
Other specified, classifiable	74	20	94
Unspecified	6	..	8
Total	2,002	490	2,492

.. Case counts are not shown where the cell count is less than 4.

Table 5.3 provides further information about the types of substances recorded as the UCoD for the 873 deaths coded as suicides by poisoning in Australia in 1999.

The most numerous category in Table 5.3 is *Other gases and vapour (X67)*. It is likely that the great majority of these deaths involved motor vehicle exhaust gas. ICD-9 provided a specific category for this External Cause of Death, but ICD-10 does not. In 1998, for example, 528 deaths were registered as due to suicide by means of motor vehicle exhaust gas. These were 94% of the 559 cases in that year coded to the ICD-9 categories which have similar scope to ICD-10, X67. (They were 95% of the cases attributed to motor vehicle exhaust, or to carbon monoxide from another source.)

Analysis of 1999 suicide data showed that, of the 571 cases where the UCoD was X58 *Other gases or vapours*, 565 also had an MCoD indicating that the person had died as the result of the *Toxic effect of Carbon Monoxide* (ICD-10, Code T58).

Table 5.3: Suicide deaths where the Underlying Cause was poisoning, Australia, 1999

Poisoning agent	Cases
Drugs and alcohol:	
Nonopioid analgesics, antipyretics and antirheumatics	4
Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, nec	76
Narcotics and psychodysleptics (hallucinogens), not elsewhere classified	45
Other drugs acting on the autonomic nervous system	7
Other and unspecified drugs, medicaments and biological substances	146
Alcohol	..
Total drugs and alcohol	279
Organic solvents and halogenated hydrocarbons and their vapours	..
Other gases and vapours	571
Pesticides	11
Other and unspecified chemicals and noxious substances	11
Total poisoning suicide deaths	873

.. Case counts are not shown where the cell count is less than 4.

A drug was recorded as being the Underlying Cause of 873 of the 2,492 suicides registered in 1999 (Table 5.3). However, a data item referred to as the *Drug Flag*, indicates involvement of a drug in 1,036 suicide deaths in 1999. (The *Drug Flag* is described in *Appendix 1: Data Issues*.)

Of the 1,036 suicide cases where a *Drug Flag* code had been assigned, 550 were classified as alcohol-related and 702 as related to some other type of drug. (While 11 cases were given *Drug Flag* codes indicating smoking and tobacco, the mechanism for the latter association is not obvious.) These groups add up to more than 1,036 because more than one type of drug was mentioned in some cases.

Although alcohol was recorded as being the Underlying Cause of Death in only one suicide during 1999 (Table 5.3), the *Drug Flag* indicates that it was deemed to have been a factor in at least 550 suicide deaths, often with other drugs.

As might be expected, all of the suicides with a drug as the UCoD (i.e. X60–X64) had this reflected in this *Drug Flag*. The *Drug Flag* also indicated involvement of alcohol or another drug in about one-third of suicides with other Underlying Cause codes.

ICD-9 provides categories to report firearm suicides according to the type of firearm used. These categories were not retained in ICD-10. However, the ABS introduced a *Firearms Flag* item which enables continued reporting according to categories similar to those in ICD-9.

Table 5.4 includes the 269 deaths registered in 1999 with an Underlying Cause code for suicide by means of a firearm (X72–X74). The table shows how these cases were coded according to ICD-10 Underlying Cause code and by the *Firearms Flag* categories.

Table 5.4: Suicide deaths where the Underlying Cause was shooting, Australia, 1999 by UCoD and Firearms Flag

	Underlying Cause of Death code			Total
	Handgun (X72)	Rifle, Shotgun and larger firearm (X73)	Other and unspecified firearm (X74)	
Firearm flag				
Handgun	24			24
Shotgun		56	5	61
Hunting rifle		106	9	115
Military firearm		..		..
Other firearm		..	..	..
Unspecified firearm	4	19	40	63
Total	28	185	56	269

.. Case counts are not shown where the cell count is less than 4.

5.6.2 Place of suicide

Under ICD-10, all External Cause codes within the range W00–Y34 (with the exception of Y06.- and Y07.-) can attract a *Place* code to indicate the type of setting in which injury occurred. The code range for suicide falls within this range (X60–X84).

Of the 2,492 cases of suicide registered in 1999, *Place* was specified in 1,432 (57%) (Table 5.5). ‘Home’ was the most common specified type of *Place* for suicide. The 864 deaths given this *Place* code were 35% of all suicides and 60% of all suicides for which a type of *Place* was specified.

Table 5.5: Place of suicide, Australia, 1999

Place	Males	Females	Persons	Column % (persons)
Home	678	186	864	35
Other specified	294	66	360	14
Street, highway	53	6	59	..
Trade, service area	36	..	38	..
Residential institution	32	4	36	..
School, other institution, publicly administered area	23	5	28	..
Farm	25	..	26	..
Industrial, construction area	10	..	12	0
Sport, athletics area	9	0	9	0
Unspecified	842	218	1,060	43
Group Total	2,002	490	2,492	100

.. Case counts are not shown where the cell count is less than 4.

6 Fall deaths, Australia

ICD code ranges for deaths due to unintentional falls

(ICD-9 E880–E888)

(ICD-10 W00–W19; ICD-10 revised for comparability with ICD-9 E880–E888, W00–W19; or X59 and any Multiple Cause code S02, S12, S32, S42, S52, S62, S72, S82, S92, T02, T08, T10, T12, or T14.2)

Table 6.1: Key indicators for fall deaths, Australia

Indicator	1998 ^(a)			1999 ^(b)			1999 Revised definition ^(c)		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
Cases	531	651	1,182	309	211	520	584	688	1,272
Percentage of all injury deaths	9.5%	27.9%	14.9%	5.3%	8.5%	6.2%	9.8%	31.2%	16.2%
Crude rate per 100,000 population	5.7	6.9	6.3	3.3	2.2	2.7	6.2	7.2	6.7
Age standardised rate per 100,000 population	8.0	6.0	6.9	4.0	1.9	2.9	8.5	6.1	7.1
Age standardised rate per 100,000 population (CF adjusted)*	8.4	6.3	7.2	n/a	n/a	n/a	n/a	n/a	n/a
Average years potential life lost (YPLL) before age 75 years	8	2	5	14	4	10	8	2	5

* Standardised rates based on ICD-9, multiplied by the CF (1.050), to improve comparability with 1999 rates based on ICD-10 (see 2.1.2).

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E880–E888.

(b) Deaths registered in 1999 for which UCoD code is ICD-10 W00–W19.

(c) Deaths registered in 1999 for which UCoD code is ICD-10 W00–W19 or X59 with any Multiple Cause code for 'fracture' (S02, S12, S32, S42, S52, S62, S72, S82, S92, T02, T08, T10, T12, or T14.2).

This chapter covers deaths due to unintentional falls. This topic is affected by the change from ICD-9 to ICD-10 more than most others (see section 6.1). Table 6.1 shows the extent of the impact when reporting follows previous practice: the case count on this basis was 520 in 1999, compared with 1,182 in 1998. The column in table 6.1 headed '1999 Revised Definition' shows the results of applying an approach to specifying 'unintentional falls' using data on MCoD. This method achieves good comparability with previous practice.

Note that this chapter does not include falls found to be suicides (n=98 in 1999), homicides (n=0), or of undetermined intent (n=10). Nor does it include most falls associated with vehicles, nor those from animals or burning structures, nor falls into water which resulted in drowning (refer to Table 7.2 in Chapter 7: *Drowning*). These restrictions reflect the structure of the External Causes chapter of ICD.

6.1 Transition to ICD-10

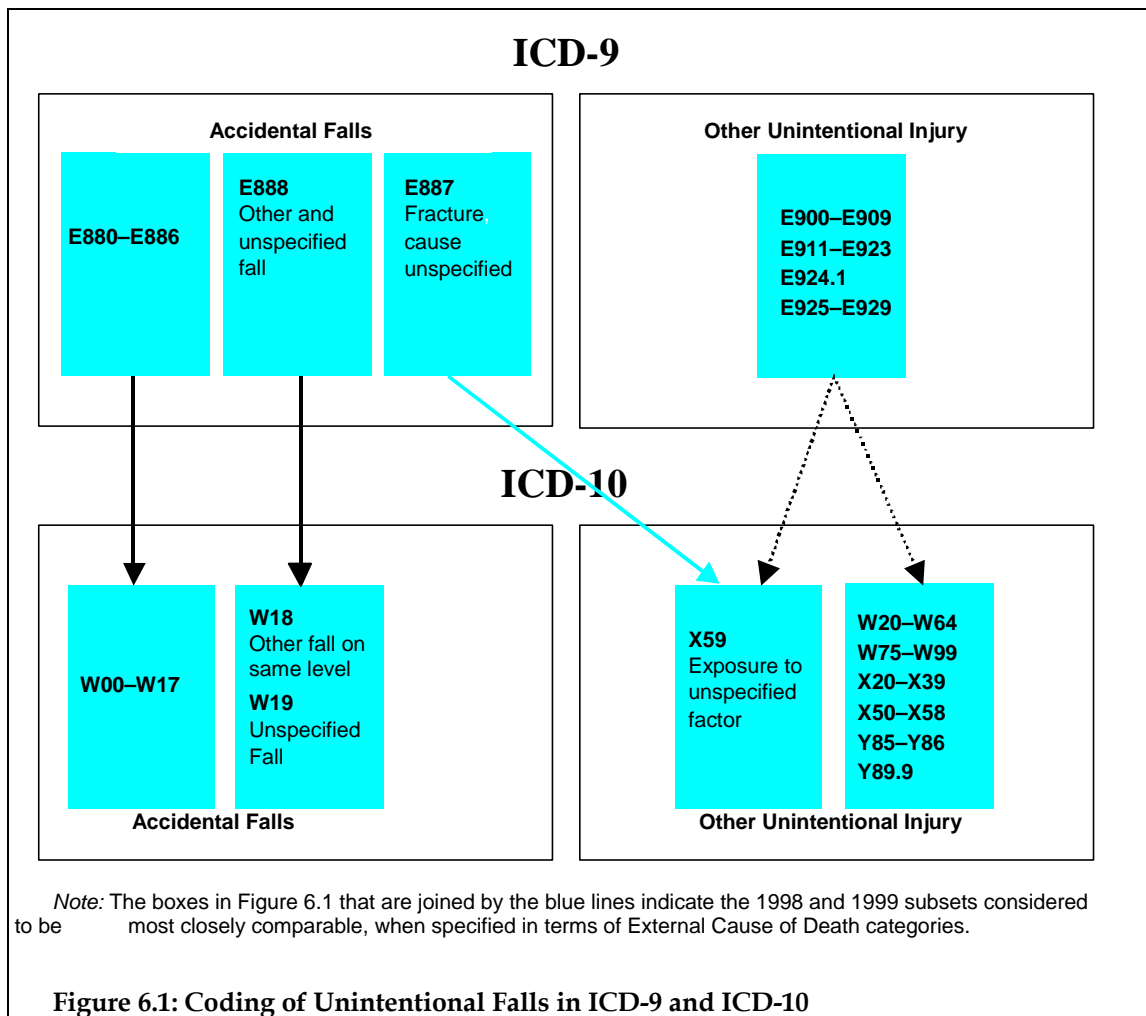
In keeping with common practice, previous NISU reports on injury mortality have included as deaths attributable to unintentional falls, the cases for which UCoD was an ICD-9 External Cause code in the range headed 'Unintentional falls' (i.e. ICD-9 E880–E888).

The section of the ICD-10 External Causes chapter for unintentional injury also includes a range of codes for 'Falls' (W00–W19).

It is essential to note that these two similarly-named code ranges are not equivalent. The difference is that the ICD-10 'Falls' code range excludes cases codable to ICD-9 category E887, *Fracture cause unspecified*.

The code E887 is something of a misfit in the *Unintentional falls* category of ICD-9 because its association with falling is neither explicit nor certain. If a fracture was listed on the death certificate with no mention of an External Cause, then the case could be coded to E887, and would generally be grouped as a fall. In fact, the (unknown) External Cause might or might not have been a fall. Hence, there is a conceptual justification for ceasing to include cases of *Fracture cause unspecified* with cases for which there is direct evidence that a fall was involved.

This has been done in ICD-10 (Figure 6.1). Cases of *Fracture cause unspecified* are coded to the ICD-10 External Cause category X59 *Exposure to unspecified factor*, and are not normally grouped as falls. *Fracture cause unspecified* is not the only type of case coded to X59, so the group of cases formerly coded to E887 cannot be specified in terms of ICD-10 External Cause codes.



This change has a large impact on the reporting of mortality due to falls in Australia because most deaths included in the conventional ICD-9 ‘Unintentional Falls’ range were coded to E887. Considering deaths registered in 1998, 61% of ‘Unintentional fall’ cases at all ages were coded to E887, and 70% of those where age at death was 65 years or older. (The impact of the change was much smaller in the United States, because a smaller proportion of ‘unintentional falls’ deaths in that country were coded to E887. For example, falls decreased about 16% with the implementation of ICD-10, a decrease deemed to be the result of a change in the treatment of unspecified fractures (E887) (Anderson et al. 2001)).

The very frequent use of E887 in Australian mortality data reflects the large number of deaths in which a fracture is recorded, but the External Cause is recorded as ‘unspecified’.

In many instances of death due to injury, External Causes are not sufficiently specified in the information provided to the coders at the ABS to allow reliable coding. Faced with this lack of information, a ‘query’ is often directed to the doctor or coroner who certified the death, and this may result in the provision of information sufficient to enable coding of the External Cause.

If a query is not issued, or if a query is made but does not prompt provision of adequate information, then the death will be coded as having an 'unspecified' External Cause. Under ICD-10, such cases should be coded to X59, 'Exposure to unspecified factor'. Under ICD-9, such cases were coded to E928.9, 'Unspecified accidents' unless information about the death indicated that a fracture was present. If so, then the case was coded to E887, 'Fracture, cause unspecified'. By convention, cases coded to E887 were included in a group titled 'Unintentional falls'.

An indication of the benefit of inquiring about External Cause can be seen in the Australian data for deaths registered in 1999. In 1999, 1,369 deaths included at least one Multiple Cause code for fracture. Of these, 64% occurred at ages 75 years and older. Overall, 55% of these cases were coded to X59, but the proportion was much higher at ages 75+ (79%) than at younger ages (12%). This reflects the proportion of cases with a fracture which were recorded as having been the subject of a request for additional information (i.e. a query), which was 82% in the older group and 11% in the younger.

Fracture cases in which a query was made were less likely to be coded to X59 than those in which a query was not made. This was so both at older ages (20%, X59 among queried cases and 86%, X59 among others) and younger ages (8% and 28%).

It is likely that some *Fracture cause unspecified* cases did not involve a fall. Hence the convention under ICD-9 of regarding them all as falls probably results in some overestimation of fall mortality. However, it is likely that most *Fracture cause unspecified* cases did involve a fall. An indication of this is found in the pattern of External Causes recorded for deaths where a fracture was present. Considering only the fracture cases for which an External Cause was specified (i.e. excluding the cases coded to X59), the proportion in which the External Cause was a fall rose with age. Considering deaths at ages 75 years and older, 'fall' was the specified External Cause for 67%. In contrast, fall was the specified External Cause of 14% of such deaths at younger ages. Consequently, omission of this large group of deaths from reporting of mortality due to unintentional falls would be misleading. In future, improvements in data quality and use of additional information sources (e.g. the National Coroners Information System – though most of the deaths which might have been due to a fall and for which information is lacking, are certified by a doctor, not a coroner) will enable more precise definition of fall-related deaths.

6.2 Overview

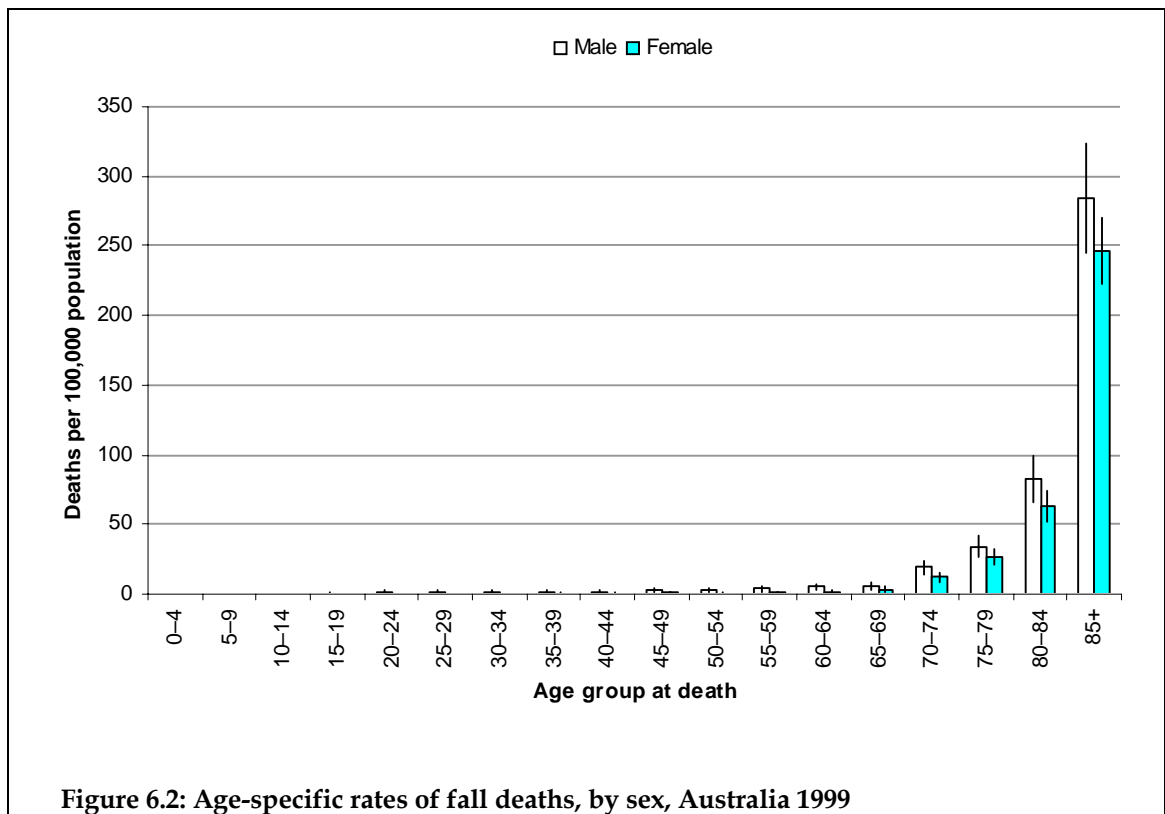
1,182 deaths registered in 1998 were coded to the ICD-9 'Unintentional Falls' categories. The comparable number in 1999 was 1,272 (revised ICD-10 definition), 7% more than in 1998.

Age-adjusted rates were similar in 1998 and 1999, especially after allowing for the ICD-9 to ICD-10 comparability factor. The adjusted rate in 1999 was 7.1 deaths per 100,000 persons (males 8.5 and females 6.1).

Unintentional falls accounted for about 15% of all injury deaths registered in 1998 (male 10%, female 28%) and, using the revised definition, 16% in 1999 (male 10%, female 31%).

6.3 Age and sex distribution

Figure 6.2 shows age-specific death rates from falls for males and females. The figure is based on deaths registered in 1999 that satisfy the Revised Definition of falls cases.



6.4 Trends in death rates

Figures 6.3 and 6.4 present age-adjusted rates of falls mortality in Australia for the period 1979–1999.

The rates in Figure 6.3 are for falls deaths at all ages, while the rates in Figure 6.4 are for deaths at ages 65 years and older. Note that the scale of the vertical axis differs between these two figures, reflecting the much higher rates for this cause of death at older ages.

The figures show rates for males and females. The age-adjusted rates for males are generally higher than those for females. The excess male rate is more marked in Figure 6.3 (falls deaths at all ages) than in Figure 6.4, reflecting the large male excess in death from this cause in early and middle adult years.

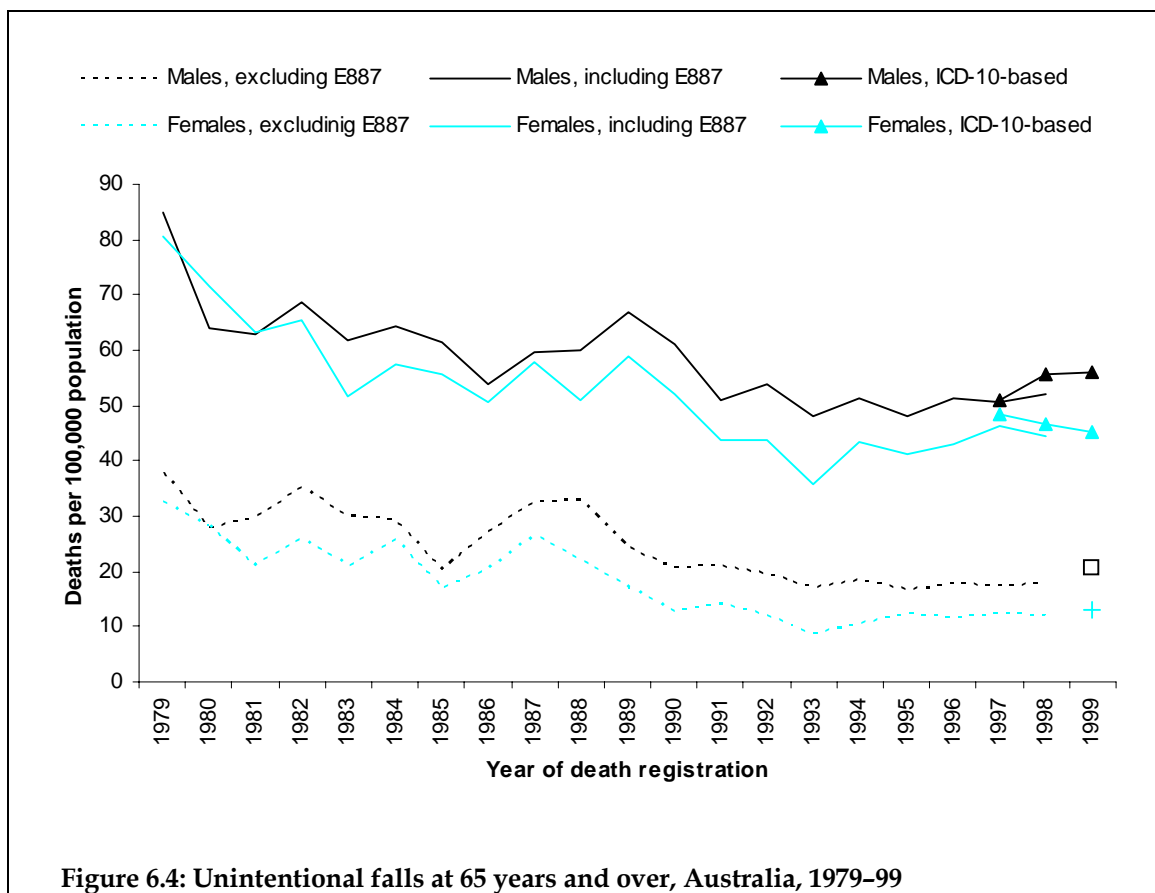
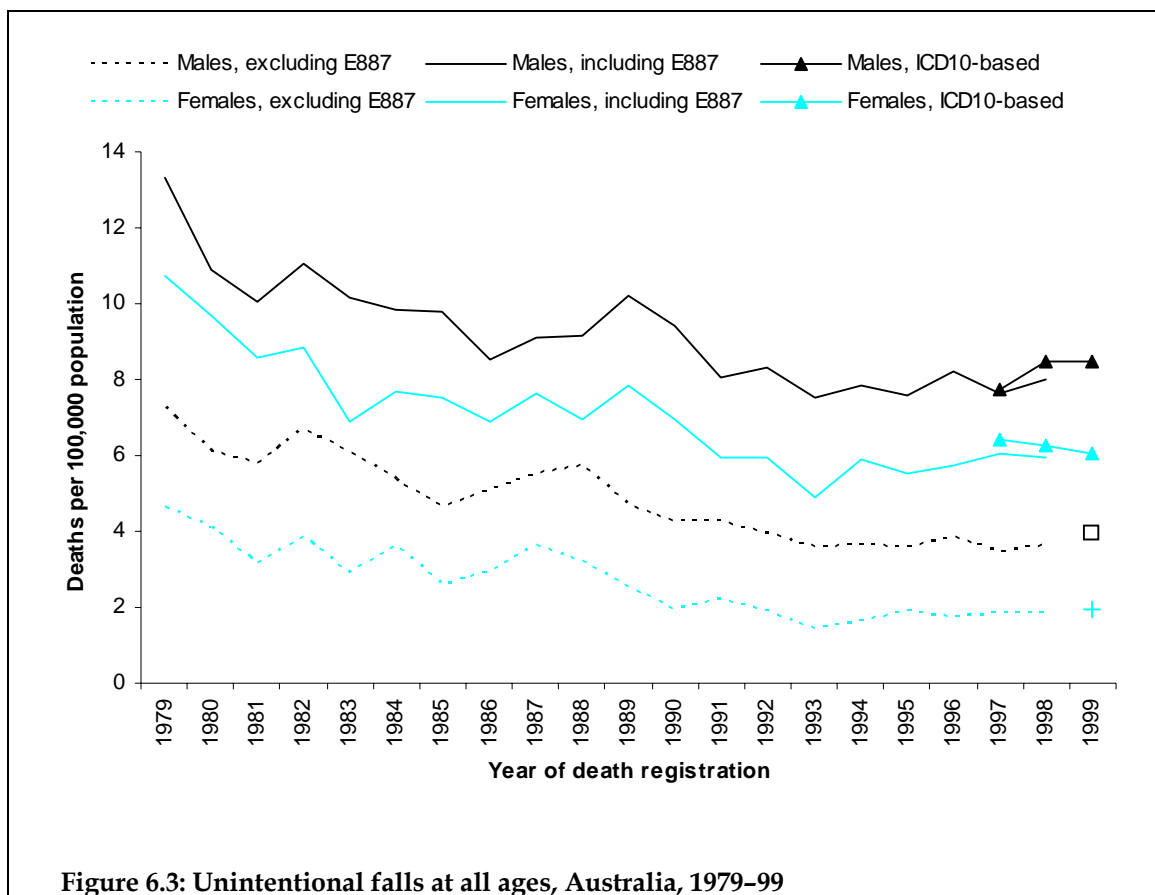
Figures 6.3 and 6.4 show rates corresponding to the ICD-9 category 'Unintentional Falls' (E880–E888) as solid lines, and rates corresponding to the ICD-10 category 'Falls' (W00–W19) as dotted lines. The basis for the difference between these categories is described in Section 6.1, above.

The rates represented by the thick solid lines, commencing in 1997, are based on the Revised ICD-10 definition, which includes cases conceptually equivalent to ICD-9 category E887, in addition to cases coded to ICD-10 codes W00–W19. The similarity of these rates with the rates for ICD-9 'Unintentional Falls' (E880–E888) can be seen for 1997 and 1998, for which data coded to ICD-9 and ICD-10 are available.

The symbols without lines show rates for 1999 defined solely in terms of ICD-10 codes W00–W19. The dotted lines are based on the ICD-9 codes conceptually equivalent to this ICD-10 range, namely E880–E886 and E888.

Trends are generally downward during the period shown. However, trends are slightly upward (solid lines) or flat (dotted lines) for the period since the early 1990s. Trends are similar for males and females.

Note that the rates shown here are all age-adjusted. Hence, they do not show the large increase that occurred in case numbers during this period, due to the rapid increase in the size of the population at highest risk of this cause of death (i.e. persons aged about 70 years or older).

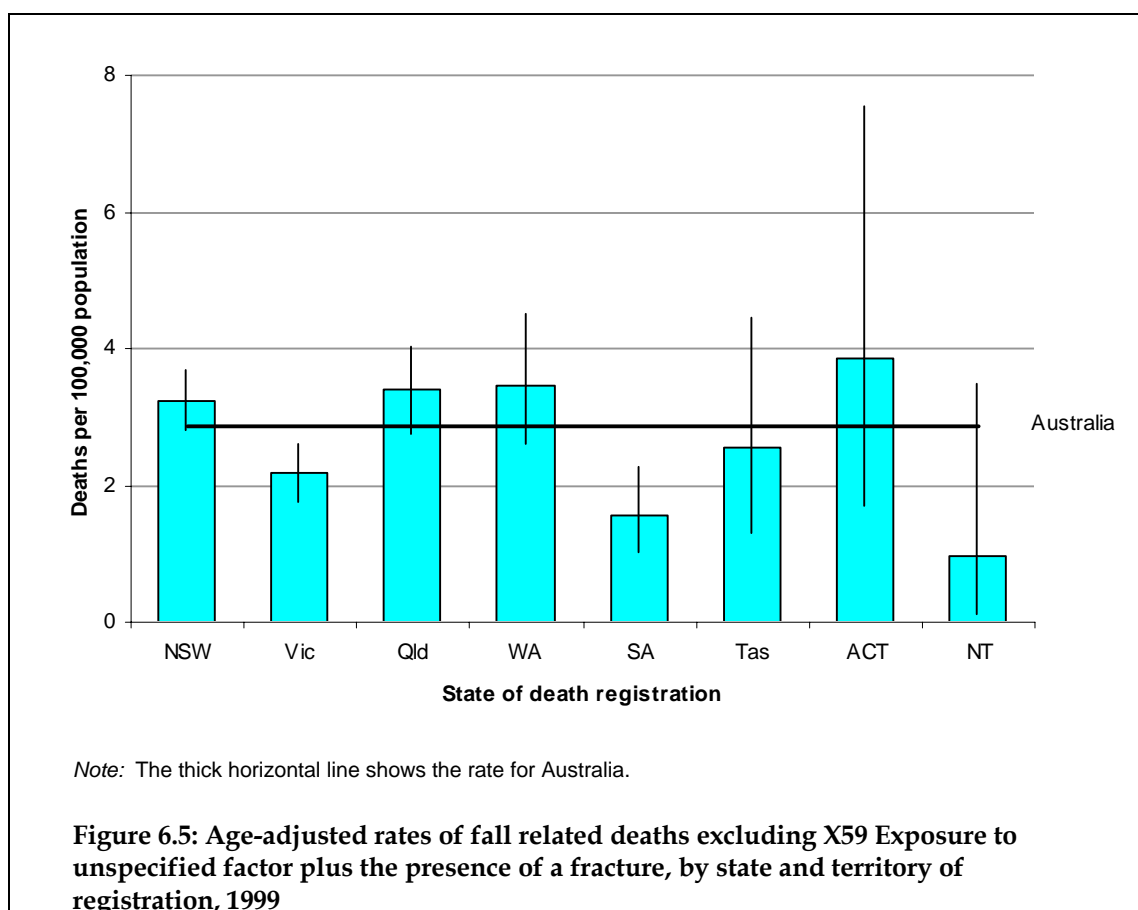


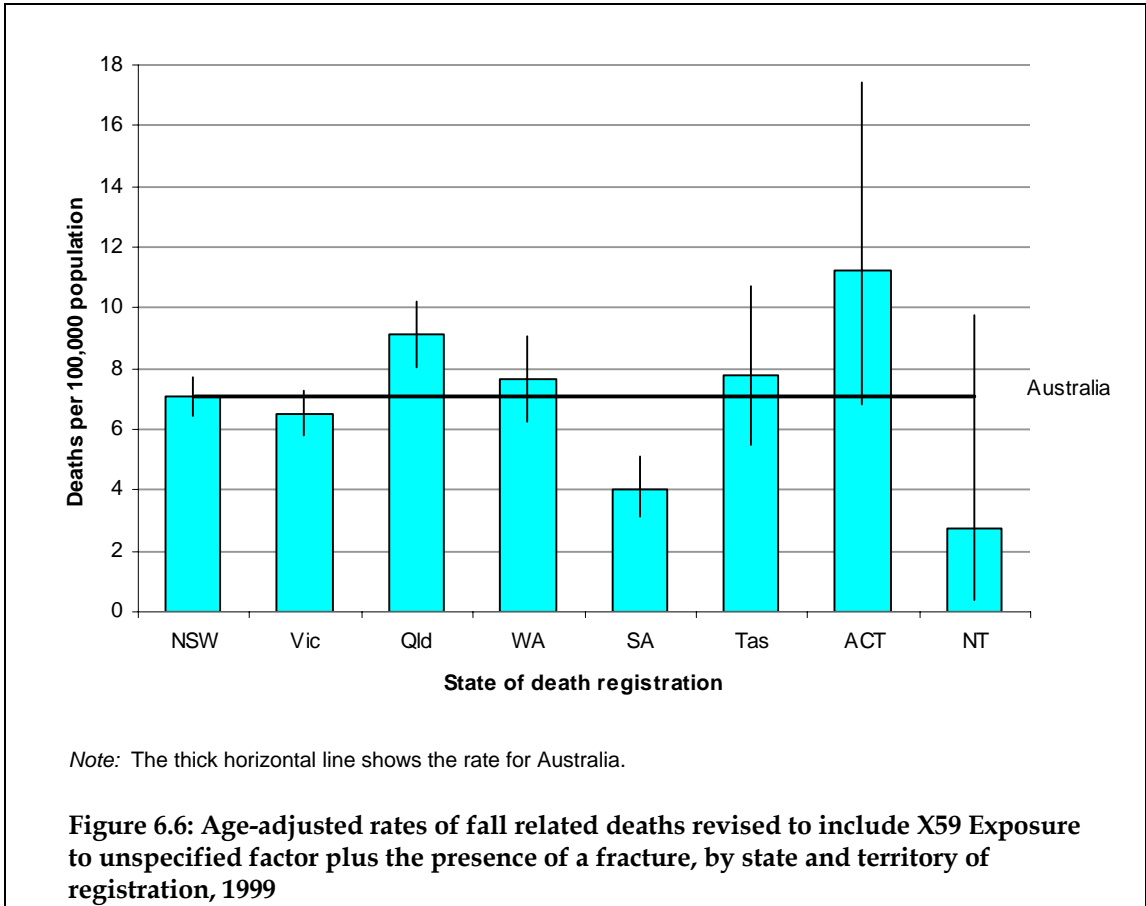
6.5 State and territory differences

Figure 6.5 shows age-adjusted rates of falls deaths at all ages registered in 1999 for Australia's states and territories, where the UCoD fell within the ICD-10 range W00–W19.

Rates appear to differ significantly between jurisdictions. However, these apparent differences should be interpreted cautiously, because variations in collection and coding might contribute to the differences. For example, the proportion of all deaths at ages 65 years and older and involving a fracture, which were certified by a coroner ranged, among the states, from 0%–26%, and the proportion of injury deaths at ages 65 years and older which were the subject of a query by the ABS ranged from 55%–100%. This makes it difficult to draw meaningful comparisons between jurisdictions.

Figure 6.6 shows all-ages age-adjusted rates of falls deaths revised to include X59 *Exposure to unspecified factor* plus the presence of a fracture. The rates shown in Figure 6.6 are substantially higher than those shown in Figure 6.5. The pattern of distribution of rates between jurisdictions are fairly similar between Figures 6.5 and 6.6.





6.6 Associated factors

The ICD-10 categories in the 'Falls' range (W00–W19) refer to a range of objects, activities and circumstances which are sometimes associated with falling. As noted above, only 520 of the 1,272 deaths in 1999 which meet the revised definition have a UCoD code in this range. No information on External Causes is available for the other 752 deaths.

Information is limited even for the 520 deaths coded to W00–W19 (Table 6.2). A little over half of these cases were coded to W19 'Unspecified fall'.

Table 6.2: Factors contributing to fall-related deaths during 1999

Nature of fall	Age group					Group Total
	0–14	15–29	30–44	45–59	60+	
Fall from, out of or through building or structure	..	12	10	9	18	50
Other fall on same level	0	..	..	9	35	48
Fall on and from stairs and steps	0	0	..	10	22	33
Fall on and from ladder	0	0	0	8	16	24
Fall from cliff	0	11	7	..	..	23
Fall on same level from slipping, tripping and stumbling	0	..	..	..	15	20
Other fall from one level to another	0	..	..	9	5	19
Fall involving bed	0	0	0	..	10	12
Fall involving chair	0	0	..	0	6	7
Fall on and from scaffolding	0	0	..	..	..	..
Fall from tree	0	0	..	0	..	..
Fall involving ice-skates, skis, roller-skates or skateboards	0	..	..	0	0	..
Fall involving wheelchair	0	0	0	..	..	..
Fall involving other furniture	0	0	0	..	0	..
Diving or jumping into water causing injury other than drowning or submersion	0	..	0	0	0	..
Unspecified fall	..	..	7	10	253	272
Total	..	30	38	65	385	520

.. Case counts are not shown where the cell count is less than 4.

7 Drowning deaths, Australia

Unintentional drowning:

(ICD-9 E910)

(ICD-10 W65–W74)

All identifiable drowning (i.e. as shown in Table 7.2 below):

(ICD-9 E910, E830, E832, E954, E964, E984, plus various others)

(ICD-10 W65–W74, V90, V92, X71, X92, Y21, plus various others)

Table 7.1: Key indicators for unintentional drowning deaths, Australia

Indicator	1998 ^(a)			1999 ^(b)		
	Males	Females	Persons	Males	Females	Persons
Cases	187	58	245	203	75	278
Percentage of all injury deaths	3.3%	2.5%	3.1%	3.5%	3.0%	3.3%
Crude rate per 100,000 population	2.0	0.6	1.3	2.2	0.8	1.5
Age standardised rate per 100,000 population	2.0	0.6	1.3	2.2	0.8	1.5
Age standardised rate per 100,000 population (CF adjusted)*	2.1	0.6	1.3	n/a	n/a	n/a
Average years potential life lost (YPLL) before age 75 years	38	47	41	42	40	41

* Standardised rates based on ICD-9, multiplied by the CF (1.016), to improve comparability with 1999 rates based on ICD-10 (see 2.1.2).

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E800–E999.

(b) Deaths registered in 1999 for which UCoD code is ICD-10 V01–Y98.

For consistency with past practice, this chapter focuses on *Unintentional drowning and submersion* as defined, in 1999, in the ICD-10 category of that name (W65–W74). Data for previous years were coded to the ICD-9 category of the same name (E910). This category includes 68% (n=278) of the 411 deaths registered in 1999, in which the UCoD was an External Cause, and for which there is evidence that drowning was involved. In 1999, under ICD-10, drowning deaths (including the other 32%), were coded as shown in Table 7.2.

Table 7.2: All identifiable drowning cases in 1999

No. in 1999	Percentage of all drowning cases in 1999	ICD-10 codes	Equivalent ICD-9 codes	ICD Category	Coverage in this report	Terminology in this report
278	68%	W65–W74	E910	Unintentional drowning and submersion	Drowning	Unintentional Drowning
48	12%	V90, V92	E830, E832	Water transport accident	Other transport deaths	
37	9%	X71	E954	Suicide and self inflicted injury by drowning	Suicide	Other identifiable drowning
..	1%	X92	E964	Assault by submersion	Homicide	
5	1%	Y21	E984	Undetermined whether unintentionally or purposely inflicted	Undetermined intent	
40*	9%	Various	Various	Various External Cause codes that do not mention drowning (e.g. road crash)	Various	Hidden drowning
411*	100%					Total drowning

* 16 additional cases were also identified in which the UCoD was not an External Cause, but where the *Drowning flag* had been applied. For these n=16 cases, the UCoD was as follows: G40 Epilepsy (n=14); I21 Acute Myocardial Infarction (n=1); I25 Chronic Ischaemic Heart Disease (n=1).

.. Case counts are not shown where the cell count is less than 4.

Note: The total number of drowning deaths was identified by using a combination of the relevant External Cause codes and the supplementary *Drowning flag* which the ABS uses to identify and code the location and circumstances of drowning deaths.

While the focus of this chapter is on *Unintentional Drownings* in 1999, some information has also been included in relation to *Total Drownings* during that year in Section 7.5 below.

7.1 Overview

There were 278 *Unintentional drowning* deaths registered in 1999, up 14% from 1998. They accounted for 3% of all injury deaths. *Total drowning* (including *Other identifiable* and *Hidden*) accounted for 411 (5%) of injury deaths registered in 1999, compared with 375 (5%) in 1998.

7.2 Age and sex distribution

Close to three times as many men as women drowned during 1999 (n=203 and n=75 respectively).

22% (n=60) of *Unintentional drowning* deaths occurred to children 0–4 years, of whom 27 drowned in a private swimming pool, 10 in a bathtub, and another 13 after falling or wandering into a body of water other than a swimming pool. *Unintentional drowning* accounted for 34% of all injury deaths in this age group.

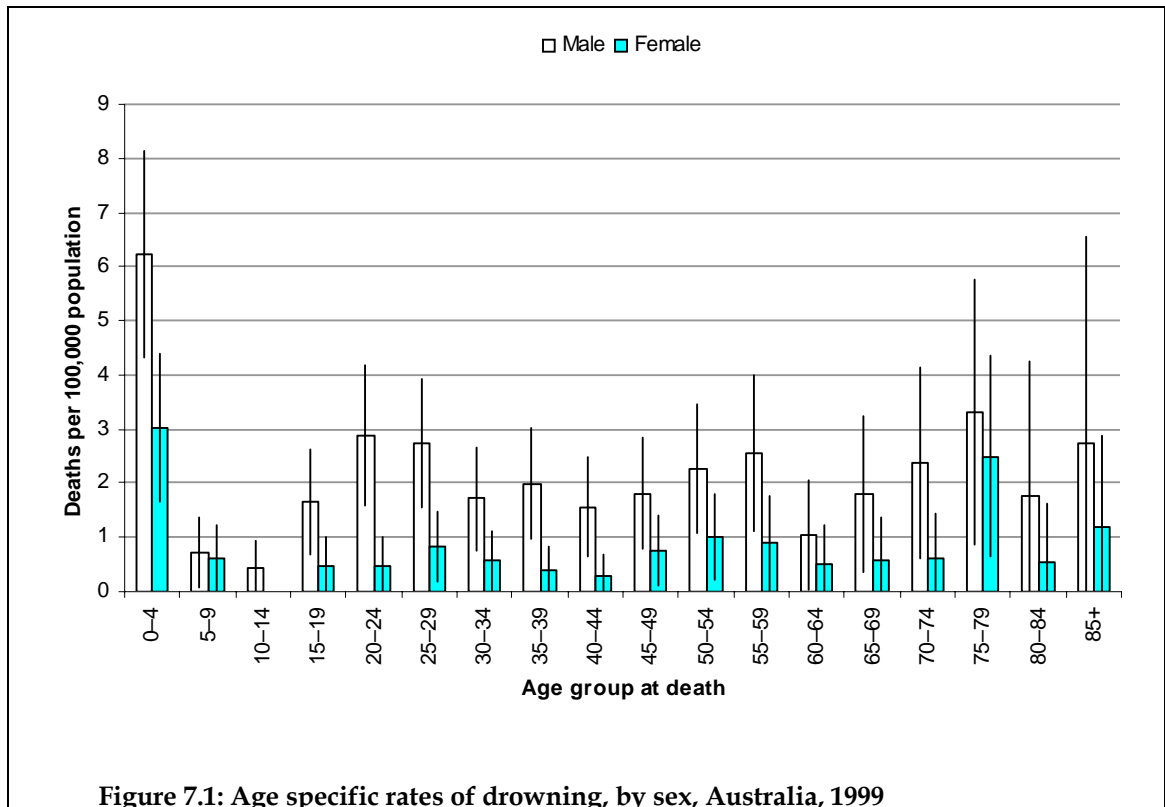
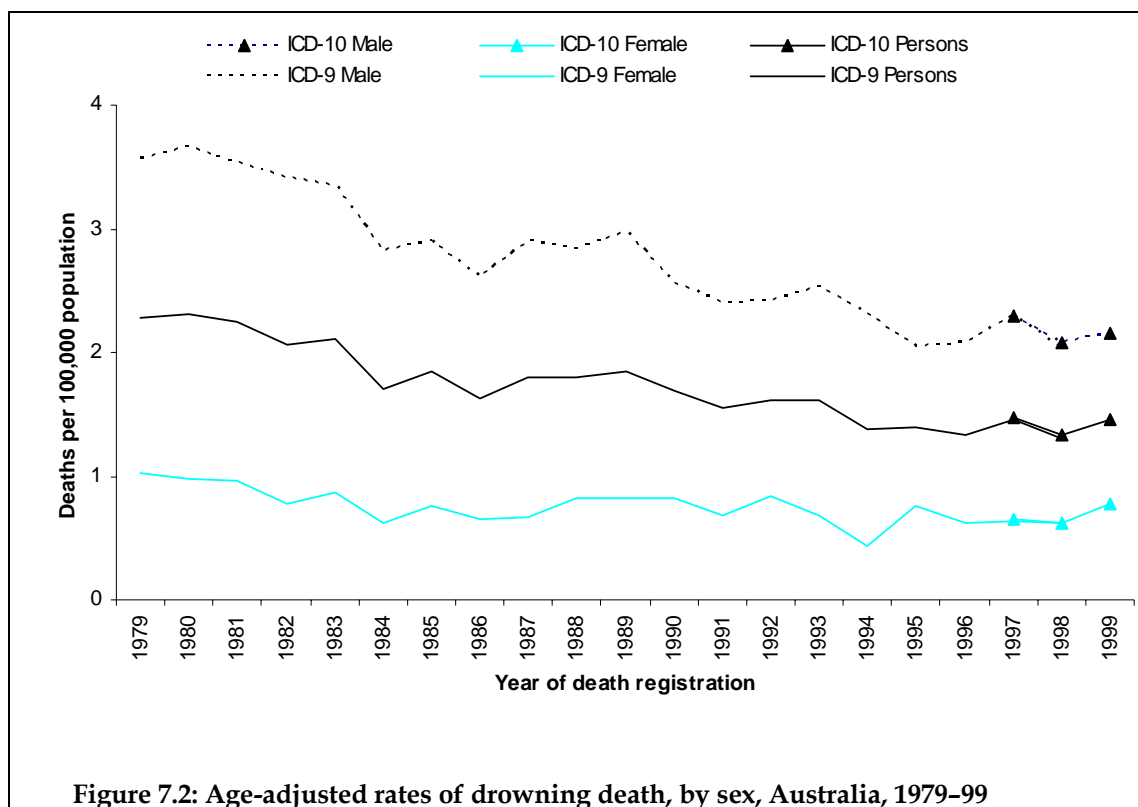


Figure 7.1: Age specific rates of drowning, by sex, Australia, 1999

7.3 Trends in death rates

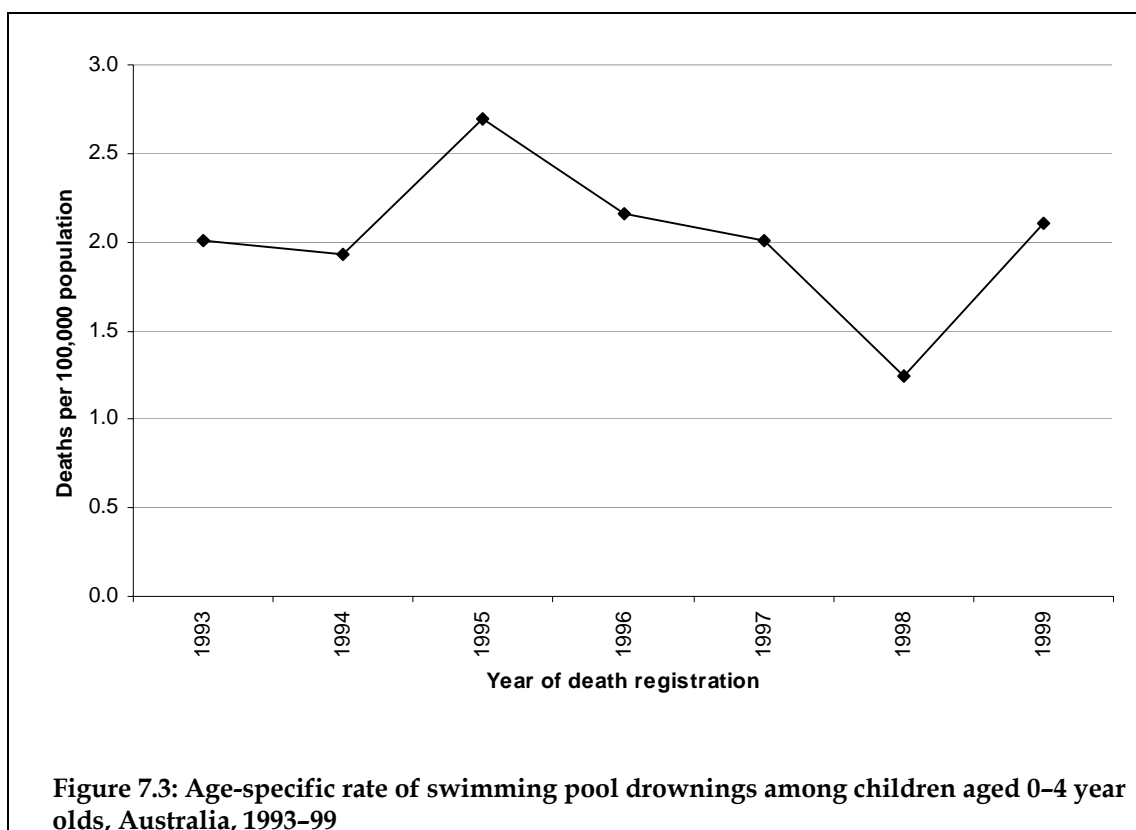
Although, there has been some fluctuation in recent years, the age-adjusted *Unintentional drowning* rate for Australia has fallen by 35% in the period 1979–1999. This continues a general downward trend since at least 1920 (Bordeaux & Harrison 1998). This decline has slowed or ceased in recent years.



Drowning of young children in swimming pools is a matter of wide interest. 'Swimming pools' could not be distinguished as a place of drowning under ICD-9. However, a special data item on circumstances of unintentional drowning has been coded by the ABS since the early 1990s. Table 7.3 and Figure 7.3 present rates for deaths when the Underlying Cause was an External Cause and the Drowning item indicated that a swimming pool was the location. (It should be noted that information based on the *Drowning Flag* was not complete before 1992.) Rates have fluctuated, partly as a consequence of fairly small case numbers.

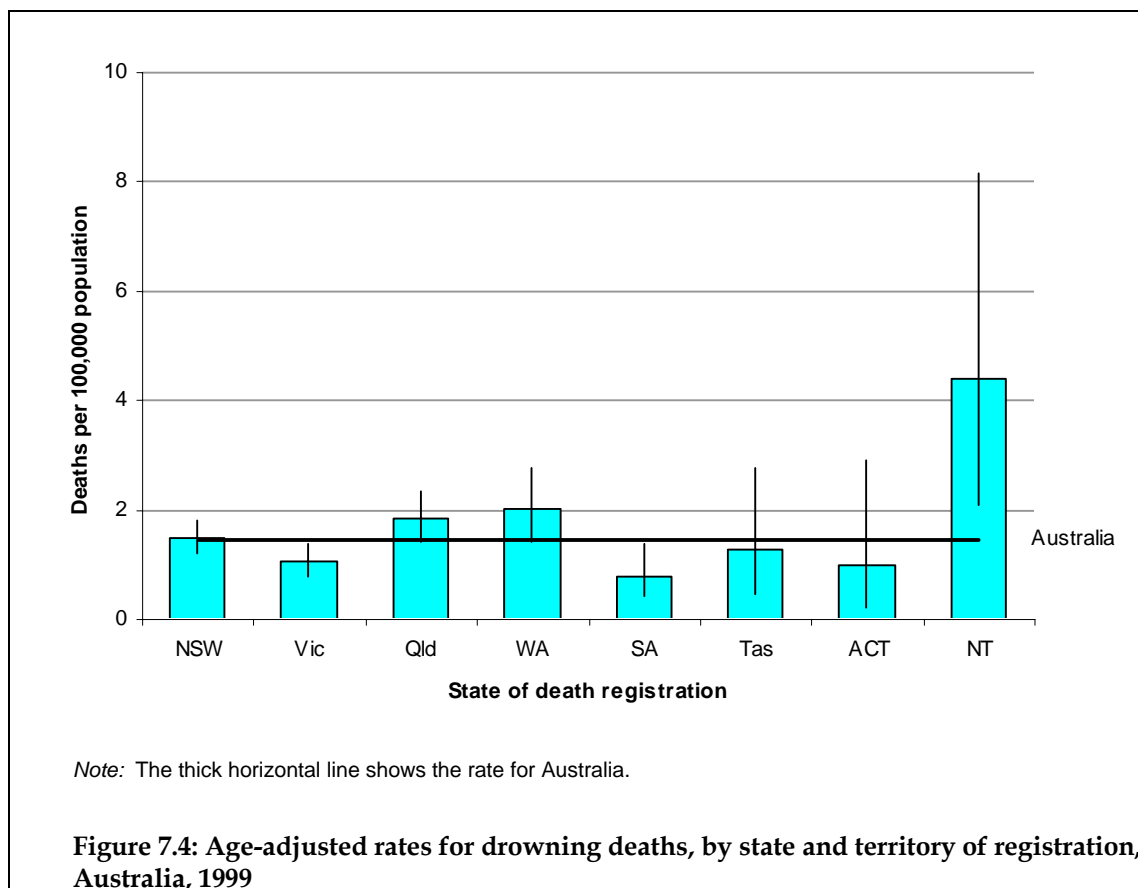
Table 7.3: Swimming pool drownings among children aged 0–4 years, Australia 1992–1999

Year of death registration	No.	Age-specific rate
1992	42	3.3
1993	26	2.0
1994	25	1.9
1995	35	2.7
1996	28	2.2
1997	26	2.0
1998	16	1.3
1999	27	2.1



7.4 State and territory differences

The drowning rate for NT residents was much higher than the national rate. Relatively small numbers of drowning deaths in this Territory result in large fluctuations from year to year. This can distort the rates and complicate interpretation of the data.



7.5 Total drownings

Sections 7.2 to 7.4 focus on *Unintentional Drowning*, the cases summarised in the first row of Table 7.2. This section on *Total Drownings* has wider scope, including all of the cases summarised in Table 7.2. A total of 411 deaths of this type were registered during 1999.

Table 7.4: Major mechanism of injury by intent for all drowning deaths, Australia, 1999

Major mechanism of injury death	Intent				Group Total
	Unintentional	Suicide	Homicide	Undetermined	
Drowning	278	37	..	5	323
Fall	4	5	0	0	9
All transportation	0	..	0	0	..
- Motor vehicle occupants	7	0	0	0	7
- Other land transport	..	0	0	0	..
Water transport (inc boating)	51	0	0	0	51
Natural/environmental	10	0	0	0	10
Poisoning	..	4	0	0	7
Other specified, classifiable	0	..	0	0	..
Other specified, not elsewhere classified	0	..	0	0	..
Total drownings	354	49	..	5	411

.. Case counts are not shown where the cell count is less than 4.

While the greatest proportion of *Total Drownings* during 1999 (n=411) were *Unintentional Drownings* (n=278; 68%), a notable proportion were the result of suicide (n=37; 9%).

Table 7.5 shows that the patterns of drowning in 1999 varied by age. In particular, there were notable differences in swimming-related drownings.

Swimming pools were the most common setting in which young children drowned (27/62; 44%) and most people who drowned in a swimming pool were young children (27/41; 66%).

Table 7.6 shows there is considerable fluctuation in case numbers and circumstances between individual years within the 0–4 year age group. In 1999, swimming pool drownings, which are the major area of concern for this age group, did not affect children under the age of one, but was the most common setting of ages 1–4 years. However, six out of nine drownings in the first year of life occurred in a bath, and six out of ten drownings of young children in a bath occurred in the first year of life.

Table 7.5: Overview of major circumstances of total drownings by age group, Australia, 1999

Circumstances of drowning ⁺	Age group												Group total	
	0-4		5-14		15-29		30-44		45-59		60+			
	Number	Column percentage	Number	Column percentage	Number	Column percentage	Number	Column percentage	Number	Column percentage	Number	Column percentage	Number	Percentage of all drownings
Swimming, pool	27	44%	..		4	5%	0	0%	..		4	6%	41	10%
Swimming, not pool	..		7	47%	32	36%	21	26%	16	17%	12	17%	89	22%
Swept from rocks	0	0%	0	0%	6	7%	4	5%	5	5%	..		16	4%
Fell or wandered into water (not a swimming pool)	13	21%	..		14	16%	16	20%	20	22%	19	27%	83	20%
Bath	10	16%	..		..		..		..		4	6%	21	5%
Watercraft	0	0%	..		8	9%	12	15%	16	17%	8	11%	45	11%
Other/unspecified	11	18%	..		22	25%	28	34%	30	32%	23	32%	116	28%
Group Total	62	100%	15	100%	88	100%	82	100%	93	100%	71	100%	411	100%

⁺ Aggregation of categories in the 'Drowning' data items included in the deaths data file.

.. Case counts are not shown where the cell count is less than 4.

Table 7.6: Overview of major circumstances of drowning at ages 0–6 years, Australia 1993–1999

Circumstances of drowning*	Age at death (completed years)													
	0		1		2		3		4		5		6	
	Number	Column percentage	Number	Column percentage	Number	Column percentage	Number	Column percentage	Number	Column percentage	Number	Column percentage	Number	Column percentage
Swimming, pool	..		54	45%	53	55%	33	59%	13	50%	6	30%	..	.
Swimming, not pool	0	0%	0	0%	..		4	7%	..		4	20%	4	20%
Swept from rocks	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	..	.
Fell or wandered into water (other than a swimming pool)	4	10%	34	29%	25	26%	13	23%	5	19%	8	40%	5	25%
Bath	28	72%	14	12%	12	13%	0	0%	..		0	0%	..	
Watercraft	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	..	
Other/unspecified	4	10%	17	14%	..		6	11%	..		..		..
Total	36	100%	119	100%	96	100%	56	100%	26	100%	20	100%	20	100%

* Aggregation of categories in the 'Drowning' data item in the deaths data file.

.. Case counts are not shown where the cell count is less than 4.

8 Unintentional poisoning deaths, Australia

(ICD-9 E850–E858, E860–E869)

(ICD-10 X40–X49)

Table 8.1: Key indicators of deaths due to unintentional poisoning, Australia

Indicator	1998 ^(a)			1999 ^(b)		
	Males	Females	Persons	Males	Females	Persons
Cases	457	154	611	801	287	1,088
Percentage of all injury deaths	8.1%	6.6%	7.7%	13.7%	11.5%	13.0%
Crude rate per 100,000 population	4.9	1.6	3.3	8.5	3.0	5.7
Age standardised rate per 100,000 population	4.8	1.6	3.2	8.4	3.0	5.7
Age standardised rate per 100,000 population (CF adjusted)*	5.2	1.8	3.5	n/a	n/a	n/a
Average years potential life lost (YPLL) before age 75 years	40	33	38	40	36	39

* Standardised rates based on ICD-9, multiplied by the CF (1.079), to improve comparability with 1999 rates based on ICD-10 (see 2.1.2).

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E850–E869.

(b) Deaths registered in 1999 for which UCoD code is ICD-10 X40–X49.

Note: Valid comparisons between 1998 and 1999 data are particularly difficult for unintentional poisoning because of changes, including the transition to ICD-10. The impact of the transition to ICD-10 is discussed in Chapter 2: *Issues in reporting injury deaths*. Other factors are discussed in Section 8.1.

8.1 Overview

This chapter focuses on *Unintentional poisoning*, defined as deaths coded to the ICD-10 External Cause category *Unintentional poisoning by and exposure to noxious substances* (X40–X49), or the equivalent range of External Cause codes in ICD-9 (E850–E869). Data for previous years were coded to the ICD-9 category *Unintentional poisoning* as defined by the ICD-9 External Cause code range E850–E869, and this is how the 1998 data in Table 8.1 have been defined.

Unintentional poisoning deaths can be divided into two main types, *Poisoning by pharmaceuticals* (ICD-10 codes X40–X44) and *Poisoning by other substances* (ICD-10 codes X45–X49). In 1999, 1,016 and 72 cases respectively, were coded to these two categories. Each of these types of case is considered in a separate subsection, below.

8.1.1 Total mortality involving poisoning

Deaths given an *Unintentional poisoning* UCoD code are not the only deaths involving poisoning. In this section, we have used MCoD codes to identify a broader set. The code ranges that we have used are summarised here:

	ICD-9	ICD-10
Poisoning by drugs, medicaments and biological substances ('Drugs')	960–979	T36–T50
Toxic effects of substances chiefly non-medicinal as to source ('Other substances')	980–989	T51–T65

All deaths registered in Australia in 1999 are summarised in Table 8.2, according to UCoD and whether a poisoning code (T36–T65) was allocated as an MCoD.

Table 8.2: Deaths with Multiple Cause codes for poisoning*, Australia 1999, by Underlying Cause of Death.

Underlying Cause of Death	Multiple Cause code for Poisoning (ICD-10 T36–T65)	
	Yes	No
Unintentional Poisoning (X40–X49)	1,086	..
Intentional self-harm (X60–X84)	908	1,584
Deaths due to other External Causes (V01–X39, X50–X59, X85–Y98)	169	4,612
Deaths due to Mental and behavioural disorders due to use of psychoactive substances, other than alcohol (F11–F19).	323	153
All other deaths (A00–F10, F20–R99)	126	119,139
Total	2,612	125,490

* Defined as presence in any MCoD field of a code in the range T36–T65.

.. Case counts are not shown where the cell count is less than 4.

Unintentional Poisoning was recorded as the Underlying Cause of 42% of the 2,612 deaths registered in 1999 in which poisoning was coded as a cause. The next largest group was intentional self-harm in which poisoning was involved (35%).

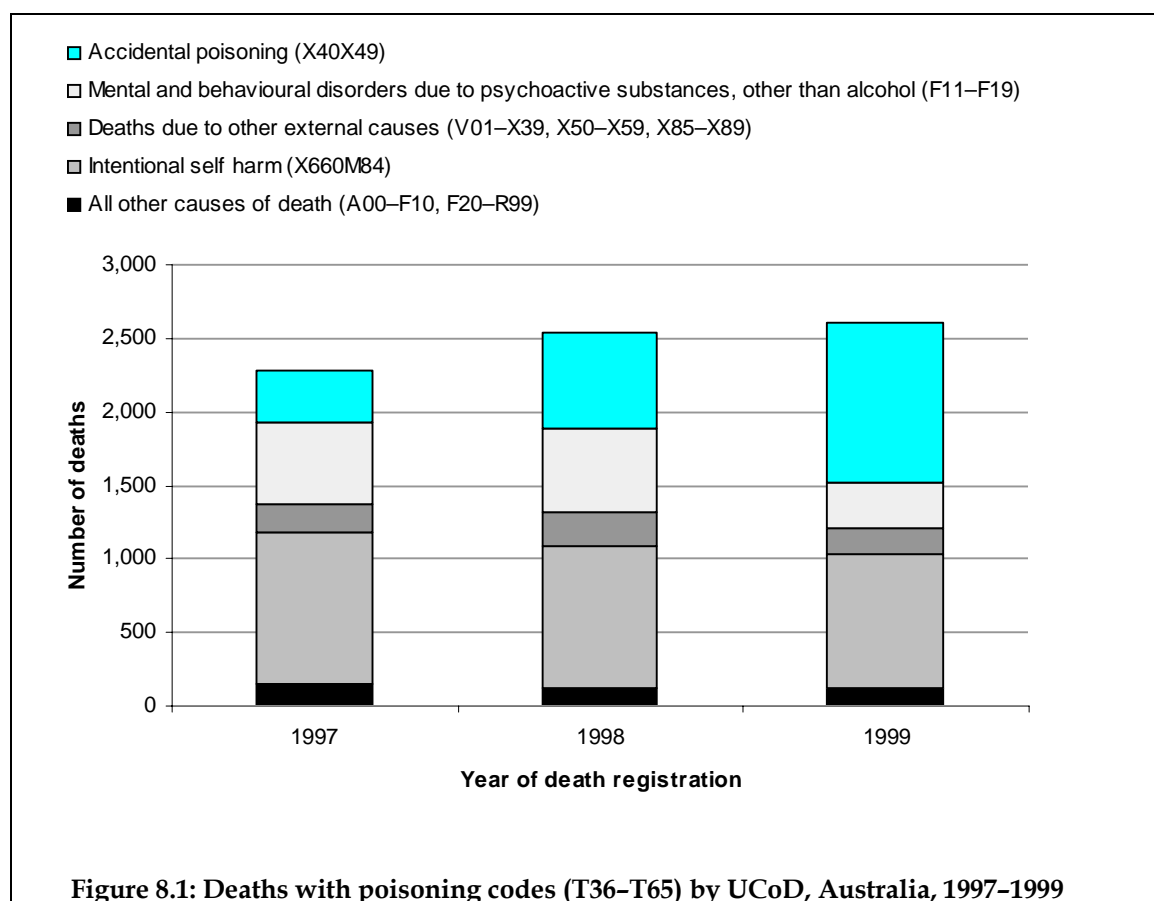
17% of the deaths registered in 1999 in which poisoning was coded as a cause did not have an External Cause as the UCoD. The UCoD of more than two-thirds of these cases was an ICD-10 code in the range F11–F19. These codes refer to mental and behavioural disorders due to the use of psychoactive substances, other than alcohol. This range has been selected here because Australian deaths data for 1997 and 1998, coded to both ICD-9 and ICD-10, show almost complete concordance between the cases coded to F11–F19 under ICD-10 and the cases coded to code 304 (Drug dependence) under ICD-9.

8.1.2 Short-term trends

Figure 8.1 shows the number of poisoning deaths, of the types distinguished in Table 8.2, that were registered in 1997, 1998 and 1999.

The most striking point is the large increase in the number of deaths in the *Unintentional Poisoning* category. The main factor underlying this was an increase in deaths due to opiate poisoning, which peaked in 1999. Note, however, that counts for three of the other categories shown in the figure declined during this period. While the number of *Unintentional Poisoning* deaths trebled, the total number of poisoning deaths increased by a much smaller proportion (19%). The size and differing directions of these changes is noteworthy.

Table 8.2 and Figure 8.1 show that not all deaths in which poisoning played a part have an External Cause code as the Underlying Cause of Deaths. Furthermore, Underlying Cause codes, alone, do not enable all deaths involving poisoning to be identified, whether 'external' or 'natural' causes.¹



8.1.3 Longer-term trends

The approach used above to examine short-term trends in deaths for which poisoning is mentioned as a cause, requires Multiple Cause codes which are not available for deaths registered before 1997. In this section, findings based on the period for which Multiple Cause codes are available are used as a basis for examining older data.

¹ 'Natural causes' is used here to refer to all deaths other than those attributed to External Causes. This is in keeping with common practice concerning mortality data.

The great majority of deaths for which a poisoning code (ICD-10, T36–T65) has been recorded as a Multiple Cause have an Underlying Cause code in one of a small number of ranges, all of which have a plausible relationship with poisoning. Three groups of cases, specified in terms of UCoD, include the great majority of cases with a poisoning code, and a small proportion of other deaths.

Two of the three groups are External Causes. One is *Unintentional Poisoning* (X40–X49), the main topic of this chapter. The second includes the subset of codes for intentional self-poisoning (suicide) which refer to poisoning as the method (X60–X69). This group also includes a similar range of codes referring to poisoning in cases where intent remained undetermined after investigation (Y10–Y19).

The third group is deaths where the Underlying Cause was coded to *Mental and behavioural disorders due to use of psychoactive substances, other than alcohol* (F11–F19). Note that these deaths are not normally included in summaries of injury mortality, as these codes are not in the ‘External Cause’ chapter of the ICD.

Considering deaths registered in 1997, 1998 and 1999 (years for which Multiple Cause codes are available), 94.4% (range 94.1%–95.4%) of records in these three groups included a Multiple Cause code for poisoning. Of all records in which a Multiple Cause code for poisoning was present, 87.9% (range 86.9%–89.6%) were in one of these three groups (black line).

Figure 8.2 shows case numbers for these three groups of cases in 1997, 1998 and 1999, along with the number of cases in each of these years which include a poisoning code.

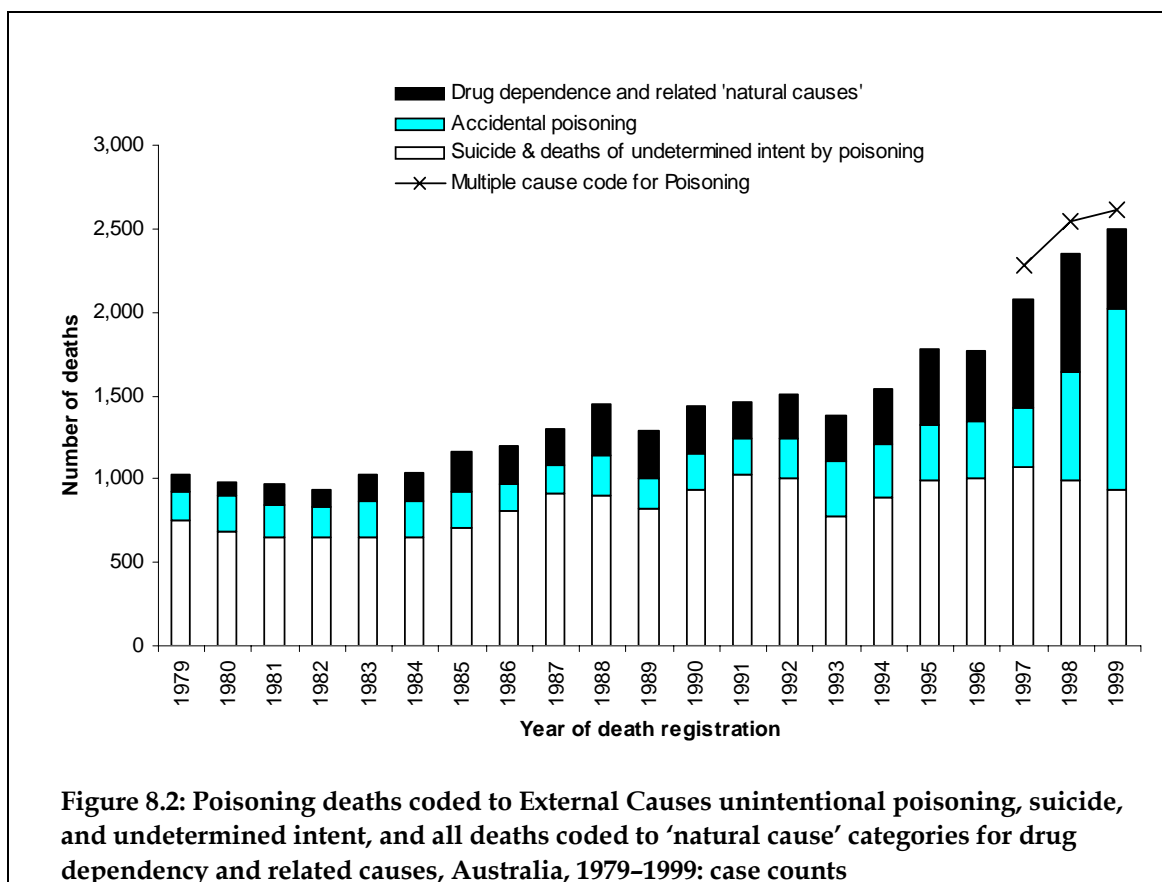


Figure 8.2: Poisoning deaths coded to External Causes unintentional poisoning, suicide, and undetermined intent, and all deaths coded to ‘natural cause’ categories for drug dependency and related causes, Australia, 1979–1999: case counts

Category inclusions: Unintentional poisoning ICD-9, E850–E869; ICD-10, X40–X49. Suicide & deaths of undetermined intent by poisoning ICD-9, E950–E952, E980–E982; ICD-10, X60–X69, Y10–Y19. Drug dependence and related ‘natural causes’ ICD-9, 304; ICD-10, F11–F19. Multiple cause code for Poisoning ICD-10, T36–T65. Based on ICD-9 coded data for 1979–1996 and ICD-10 coded data for 1997–1999.

Figure 8.2 also shows annual case numbers from 1979–1996 for three conceptually equivalent groups, specified in terms of ICD-9. Based on the findings for 1997–1999, it is likely that the inclusion of the third group (ICD-9, 304, Drug Dependence) improves the indication of frequency of deaths involving poisoning in the earlier period. If the relationship found in 1997–1999 between ‘poisoning’ and these three groups held in the earlier period, then the figure provides an indication of the prevalence of poisoning in that period.

8.1.4 Components of change in poisoning mortality case counts

Comparison between Unintentional Poisoning data for 1998 and for 1999 (as shown in Table 8.1) is complicated, because at least three factors were changing during the period. These are the change from ICD-9 to ICD-10, changes in the proportion of deaths involving poisoning that were given a UCoD code of *Unintentional Poisoning*, and a marked rise in the number of deaths involving poisoning.

8.1.4.1 Transition to ICD-10

The change from ICD-9 to ICD-10 appears to account for an increase of about 8% in the number of cases included in the *Unintentional Poisoning* category. This is based on the Comparability Factor of 1.079, calculated using the ABS file of deaths registered in 1998, coded to ICD-9 and ICD-10. (The CF based on 1998 deaths for the sub-group *Unintentional poisoning by other substances* was 1.184. Note that this category includes a small number of deaths, and that the CF for the two years 1997 and 1998 combined was 1.024.)

8.1.4.2 Changes in the allocation of codes to cases

The proportion of all Poisoning deaths that were given a UCoD code of *Unintentional Poisoning* rose sharply from 15% in 1997 to 26% in 1998 and 42% in 1999.

Narcotic drugs (mainly opiates; ICD-10, T40.0–T40.6) accounted for the bulk of the rise in poisoning mortality in this period. The number (and percentage) of *Unintentional Poisoning* deaths in which narcotics were mentioned was 181 (58%) in 1997, 397 (65%) in 1998 and 789 (78%) in 1999. *Unintentional Poisoning* deaths involving other substances rose, but much more modestly, the case counts in the three years being 131, 217 and 227.

In contrast, the number of deaths given the drug-related Underlying Cause codes F11–F19 rose between 1997 and 1998, then declined sharply in 1999. Considering only the cases in this group with mention of narcotics, the number (and percentages) declined throughout the period, from 532 (82%) in 1997 to 508 (72%) in 1998 and 297 (62%) in 1999.

If different types of deaths were coded consistently to these two categories during this period, then separate explanations are required for the **rise** in *Unintentional Poisoning* narcotic-related deaths, coincident with a **decline** in narcotic-related deaths attributed to drug dependency and related problems. While the rise is explicable (i.e. the documented increase in heroin overdose cases, mainly in NSW and Victoria, which peaked in 1999), it is difficult to conceive of an explanation for a downward trend in the number of narcotic-related deaths in the latter category, at the same time.

The ABS has published its process for coding drug-related deaths which implies that the two categories are similar. If drug dependence is implicated on the Medical Certificate of Cause of Death, the ABS classifies the death to the chapter on mental and behavioural disorders (ICD-10 codes F11–F16, F19). If there is no mention of dependence, the death is classified as unintentional and coded to the chapter on External Causes (ICD-10 codes X40–X44). Further to this, any cases involving drugs that are not finalised by the coroner before closure of the annual deaths file are coded as unintentional (Australian Bureau of Statistics 2002). Moreover, the ABS has advised that, ‘to obtain comprehensive coverage of accidental deaths, relevant codes from both chapters [ICD-10 Chapters XI and XX] must be included.’ (Australian Bureau of Statistics 2002).

We concur with the ABS, and consider that at least some of the deaths given Underlying Cause codes in the range F11–F19 (and, under ICD-9, 304) are similar to deaths coded to the *Unintentional Poisoning* code range, and that there has been variation in recent years in the allocation of such deaths to the two Underlying Cause categories. The available data indicate that this explanation applies to deaths related to narcotic poisoning. It is less clear whether it applies similarly to the smaller number of deaths in these categories that are related to poisoning by other substances.

In the period 1997–1999, variation in allocation of UCoD codes was generally towards the *Unintentional Poisoning* category, though with fluctuations, especially when examined for separate jurisdictions and shorter time periods.

8.1.4.3 Rise in poisoning deaths

A consequence of this variation, is that estimates of change in poisoning mortality defined (as in Table 8.1) in terms of *Unintentional Poisoning* show an exaggerated increase. For example, the case count of *Unintentional Poisoning* deaths in 1999 was 65% higher than in 1998. In contrast, the combined category including cases coded to F11–F19 as well as *Unintentional Poisoning* increased 14% between the two years. (Annual increases of narcotic-related cases were 99% for *Unintentional Poisoning* and 20% for the combined category.) A related effect is distortion of jurisdiction-specific values (see 8.2.4).

8.2 Unintentional poisoning by pharmaceuticals

(ICD-9 E850–E858)

(ICD-10 X40–X44)

Table 8.3: Key indicators of deaths due to unintentional poisoning by pharmaceuticals, Australia

Indicator	1998 ^(a)			1999 ^(b)		
	Males	Females	Persons	Males	Females	Persons
Cases where the UCoD was an External Cause	430	143	573	745	271	1,016
Age standardised rate per 100,000 population	4.5	1.5	3.0	7.8	2.8	5.3
Age standardised rate per 100,000 population (CF adjusted)*	4.9	1.6	3.2	n/a	n/a	n/a
Average years potential life lost (YPLL) before age 75 years	41	34	39	41	36	40

* Standardised rates based on ICD-9, multiplied by the CF (1.072), to improve comparability with 1999 rates based on ICD-10 (see 2.1.2).

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E850–E858.

(b) Deaths registered in 1999 for which UCoD code is ICD-10 X40–X44.

Note: Valid comparisons between 1998 and 1999 data are particularly difficult for unintentional poisoning because of changes including the transition to ICD-10. The impact of the transition to ICD-10 is discussed in Chapter 2: *Issues in reporting injury deaths*. Other factors are discussed in Section 8.1.

This sub-section focuses on deaths due to *Poisoning by pharmaceuticals* which were recorded as ‘unintentional’. 1,016 such cases were registered in 1999, accounting for 12% of all injury deaths at an overall rate of 5.3 per 100,000 population.

8.2.1 Transition to ICD-10

The transition to ICD-10, as such, is likely to have had a modest impact on this category. The Comparability Factor for this category (based on dual-coded data for 1998) was 1.072, indicating that an increase in cases of about 7% can be expected to accompany the transition. However, a change of this magnitude is not easily discerned, given the much larger change that occurred in case numbers for other reasons.

The number of deaths given an Underlying Cause code representing *Unintentional poisoning by pharmaceuticals* increased by 77% between 1998 and 1999. The only other change of comparable size between these two years was the shift of several hundred cases from ‘Falls’ to ‘Other unintentional’ (see Figure 2.1).

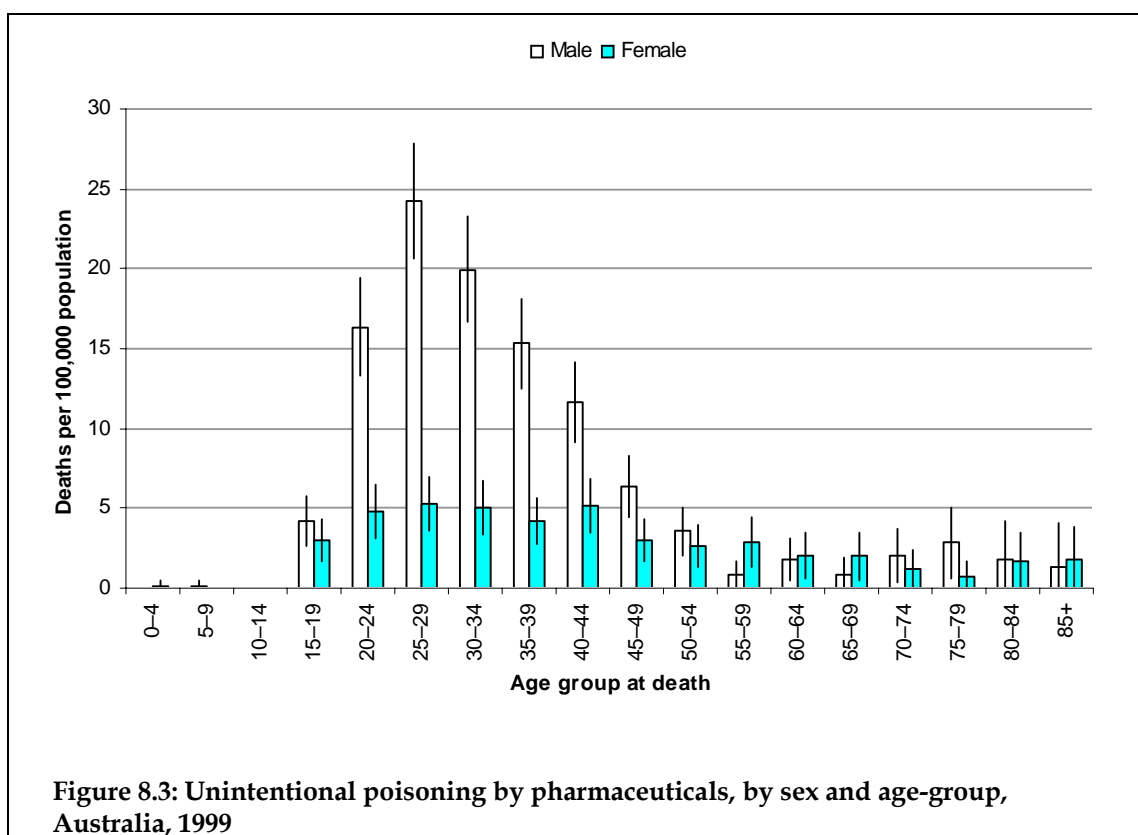
Unlike the decline in *Falls* cases, most of the increase in *Poisoning by pharmaceuticals* cases cannot be explained by an obvious difference between ICD-9 and ICD-10. Analysis of the dual-coded cases for 1998 produced a Comparability Factor of 1.072

This matter was considered in section 8.1, in relation to *Unintentional Poisoning* generally. The issues discussed there apply particularly to this sub-group, *Unintentional poisoning by pharmaceuticals*.

The coincidence of rapid change in the number of relevant cases, change in version of ICD, and changes in coding practice greatly complicate assessment of this category of deaths for the period covered by this report. The issues can be expected to become clearer when a few additional years of data are available. Further analysis of this topic should be undertaken at that time.

8.2.2 Age and sex distribution

In 1999, males accounted for 73% (n=745) of unintentional poisoning deaths due to pharmaceuticals. Rates were highest for males aged 20–44 years and this age group accounted for 83% (n=622) of all male unintentional drug deaths. Males between 25–39 years had rates about four times higher than females in equivalent age groups.



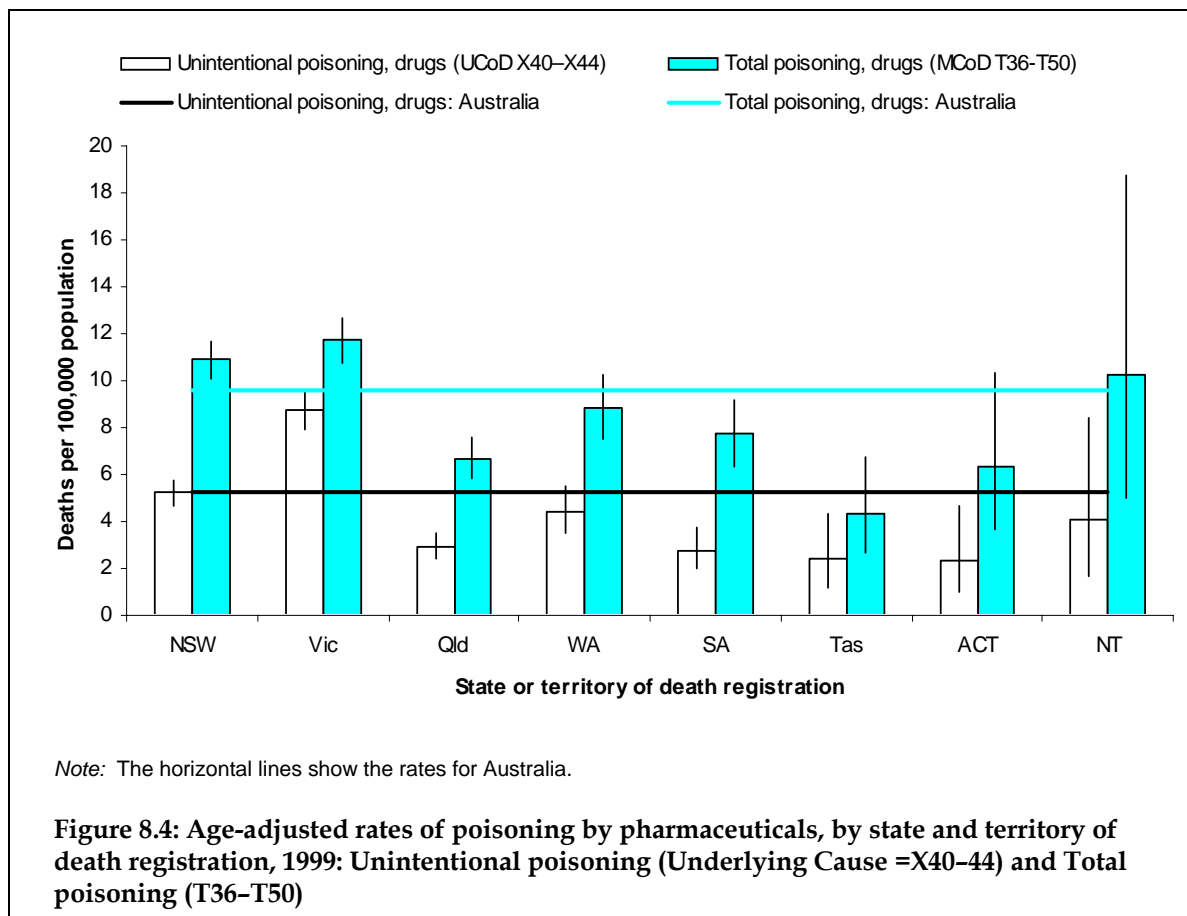
8.2.3 Trends in death rates

Long-term trends in *Unintentional poisoning by pharmaceuticals* are not reportable in a meaningful manner at present, for reasons discussed in Section 8.1, above. See Figure 8.2 for estimated trends in total deaths related to poisoning.

8.2.4 State and territory differences

The variation, between jurisdictions and over time, in the proportion of all drug poisoning deaths that are coded to X40–X44 threatens the validity of state and territory comparisons.

Figure 8.4 shows rates based on deaths registered in 1999 in which the UCoD was recorded as involving a drug, excluding cases where poisoning was found to be intentional. The series titled ‘Unintentional poisoning (UCoD X40–X44)’ is restricted to cases where the drug poisoning was coded as an External Cause. The series ‘Total poisoning, drugs (MCoD T36–T50)’ also includes apparently similar deaths, such as those coded as due to psychoactive substance use (F11–F16, F19). In Australia as a whole in 1999, almost three-quarters of drug deaths, defined in this way, were assigned an External Cause code. The proportion differed greatly between jurisdictions, being much lower in NSW and South Australia than in Victoria, Queensland or Tasmania (Figure 8.4).



8.2.5 Associated factors

442 (44%) of the cases of unintentional poisoning by pharmaceuticals were coded to the category *Narcotics and psychodysleptics (hallucinogens)* (372 male, 70 female). 372 (84%) of the 442 deaths occurred in the age range 20–44 years. Multiple Cause codes for all 442 of these cases refer to narcotic drugs.

The most common Underlying Cause code for these deaths was X44, a residual category for 'other and unspecified' drugs, etc. (n=478). Multiple Cause codes for 347 of these cases refer to narcotic drugs.

The other frequently recorded type of pharmaceutical was *Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs* (n=84; 8%).

According to the ABS *Drug Flag*, alcohol was involved in 287 (28.2%) of these cases.

8.3 Unintentional poisoning by other substances

(ICD-9 E860–E869)

(ICD-10 X45–X49)

This sub-section deals with unintentional poisoning by substances other than pharmaceuticals. It includes acute poisoning by alcoholic beverages, petroleum substances, agricultural chemicals, motor vehicle exhaust gas, foodstuffs and poisonous plants.

In 1999, 72 deaths were registered as being due to unintentional poisoning by *Other substances*.

Table 8.4: Key indicators of deaths due to poisoning by other substances, Australia

Indicator	1998 ^(a)			1999 ^(b)		
	Males	Females	Persons	Males	Females	Persons
Cases	27	11	38	56	16	72
Age standardised rate per 100,000 population	0.3	0.1	0.2	0.6	0.2	0.4
Age standardised rate per 100,000 population (CF adjusted)*	0.4	0.1	0.2	n/a	n/a	n/a
Average years potential life lost (YPLL) before age 75 years	32	24	29	29	27	29

* Standardised rates based on ICD-9, multiplied by the CF (1.184), to improve comparability with 1999 rates based on ICD-10 (see 2.1.2).

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E860–E869.

(b) Deaths registered in 1999 for which UCoD code is ICD-10 X45–X49.

Note: Valid comparisons between 1998 and 1999 data are particularly difficult for unintentional poisoning because of changes including the transition to ICD-10. The impact of the transition to ICD-10 is discussed in Chapter 2: *Issues in reporting injury deaths*. Other factors are discussed in Section 8.1.

8.3.1 Transition to ICD-10

The transition from ICD-9 to ICD-10 appears to have had some impact on the comparability of 1999 data with that of previous years. NISU's analysis of dual-coded data for 1998 (described in Chapter 2) yielded an ICD-9/ICD-10 comparability factor of 1.18. The specific impact is, however, difficult to gauge because of the small numbers of deaths which fall into this category. The CF based on combined data for 1997 and 1998 was 1.024.

8.3.2 Age and sex distribution

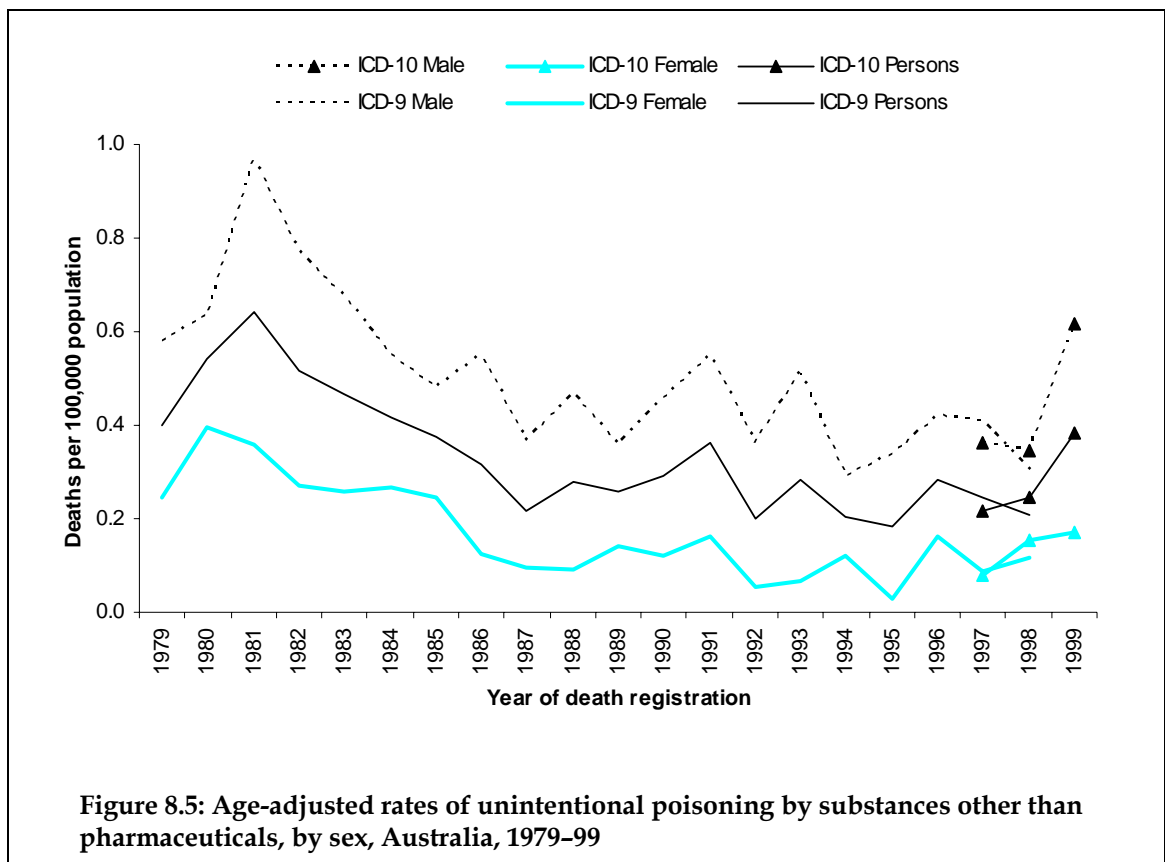
The small number of cases in this group complicates interpretation of age and sex-specific rates. A chart is not included for this reason.

8.3.3 Trends in death rates

Trends in death due to *Unintentional poisoning by other substances* are difficult to assess. This is for the reasons discussed in Section 8.1, above. In addition, the relatively small numbers of cases coded to this category result in larger random variation.

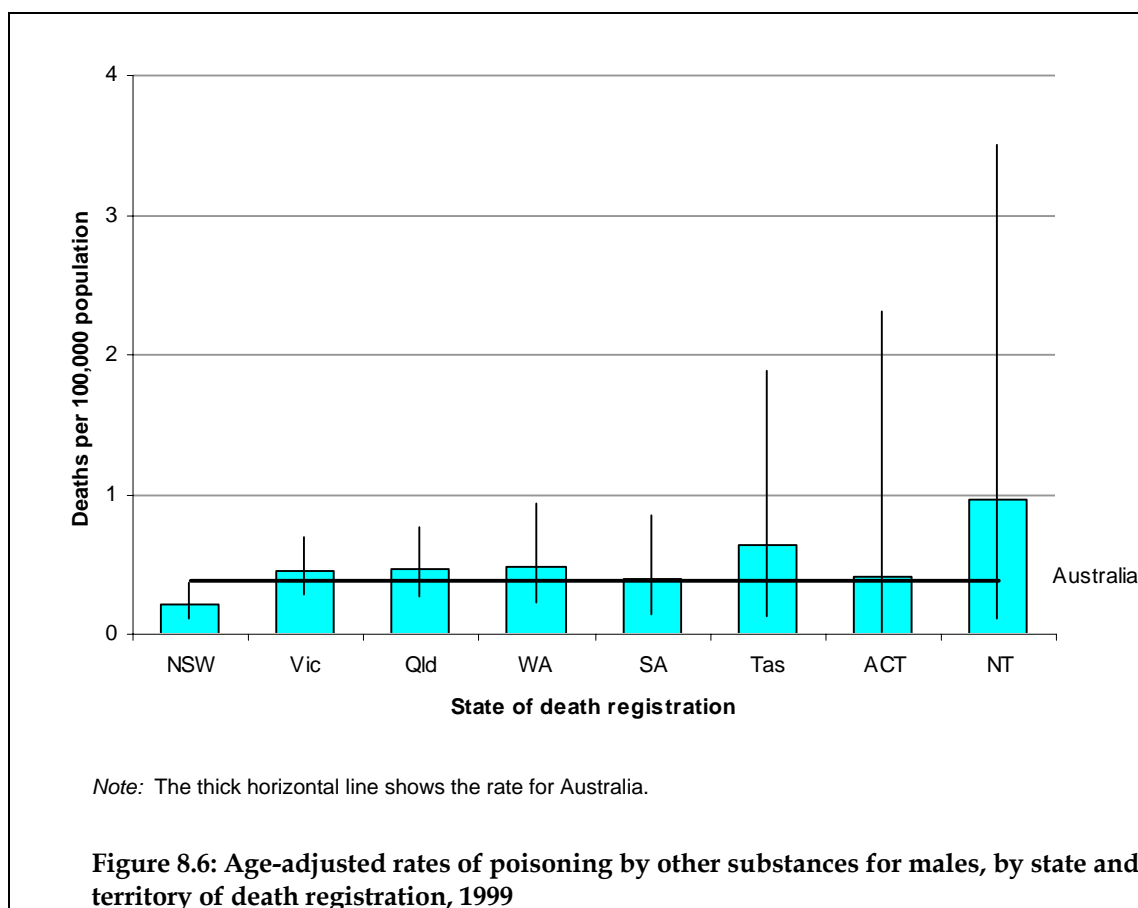
Figure 8.5 shows rates of deaths from 1979–1999 for which the UCoD was coded as *Unintentional poisoning by other substances*. The code ranges included are ICD-9, E960–E969 (1979–1998) and ICD-10, X45–X49 (1997–1999).

The point-estimate rate for 1999 was relatively high. Whether this reflects an underlying increase, or is a consequence of random variation and the factors discussed in Section 8.1, will be clearer when further data are available.



8.3.4 State and territory differences

Because of the small number of cases, caution must be exercised in the interpretation of state and territory differences. None of the rates for states and territories were significantly different from the Australian estimate. The rate which came closest to being so was that for New South Wales.



8.3.5 Associated factors

Of the 72 deaths caused through poisoning by other substances, 44% (n=32) were associated with exposure to types of *Gases and vapours* such as carbon monoxide, motor vehicle exhaust gas, nitrogen oxide and sulphur dioxide. *Alcohol* was the substance responsible in 25 cases (35%). *Organic solvents and halogenated hydrocarbons and their vapours* caused 4 deaths, and *Pesticides* caused less than 4 deaths. A poisoning agent was not specified in 8 cases (11%).

9 Smoke, fire and flames, heat and hot substances deaths, Australia

(ICD-9 E890–E899, E924.0, E924.8, E924.9)

(ICD-10 X00–X19)

Table 9.1: Key indicators for smoke, fire and flames, heat and hot substances deaths, Australia

Indicator	1998 ^(a)			1999 ^(b)		
	Males	Females	Persons	Males	Females	Persons
Cases	81	52	133	58	43	101
Percentage of all injury deaths	1.4%	2.2%	1.7%	1.0%	1.7%	1.2%
Crude rate per 100,000 population	0.9	0.6	0.7	0.6	0.5	0.5
Age standardised rate per 100,000 population	1.0	0.5	0.7	0.7	0.4	0.5
Age standardised rate per 100,000 population (CF adjusted)*	1.0	0.5	0.7	n/a	n/a	n/a
Average years potential life lost (YPLL) before age 75 years	31	23	28	29	30	29

* Standardised rates based on ICD-9, multiplied by the CF (0.993), to improve comparability with 1999 rates based on ICD-10 (see 2.1.2).

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E800–E999.

(b) Deaths registered in 1999 for which UCoD code is ICD-10 V01–Y98.

9.1 Transition to ICD-10

The transition from ICD-9 to ICD-10 appears to have had only a modest impact on comparability in relation to this category of injury death. The estimated comparability factor calculated from analysis of dual-coded 1998 data was 0.99. This compares with a United States estimate of 0.97.

9.2 Overview

Under ICD-10, it is no longer possible to use External Cause codes to determine whether a death was the result of smoke inhalation. Under ICD-9, information at the 4th digit level had made it possible to isolate cases of smoke inhalation when the death had been associated with a fire within a building or structure.

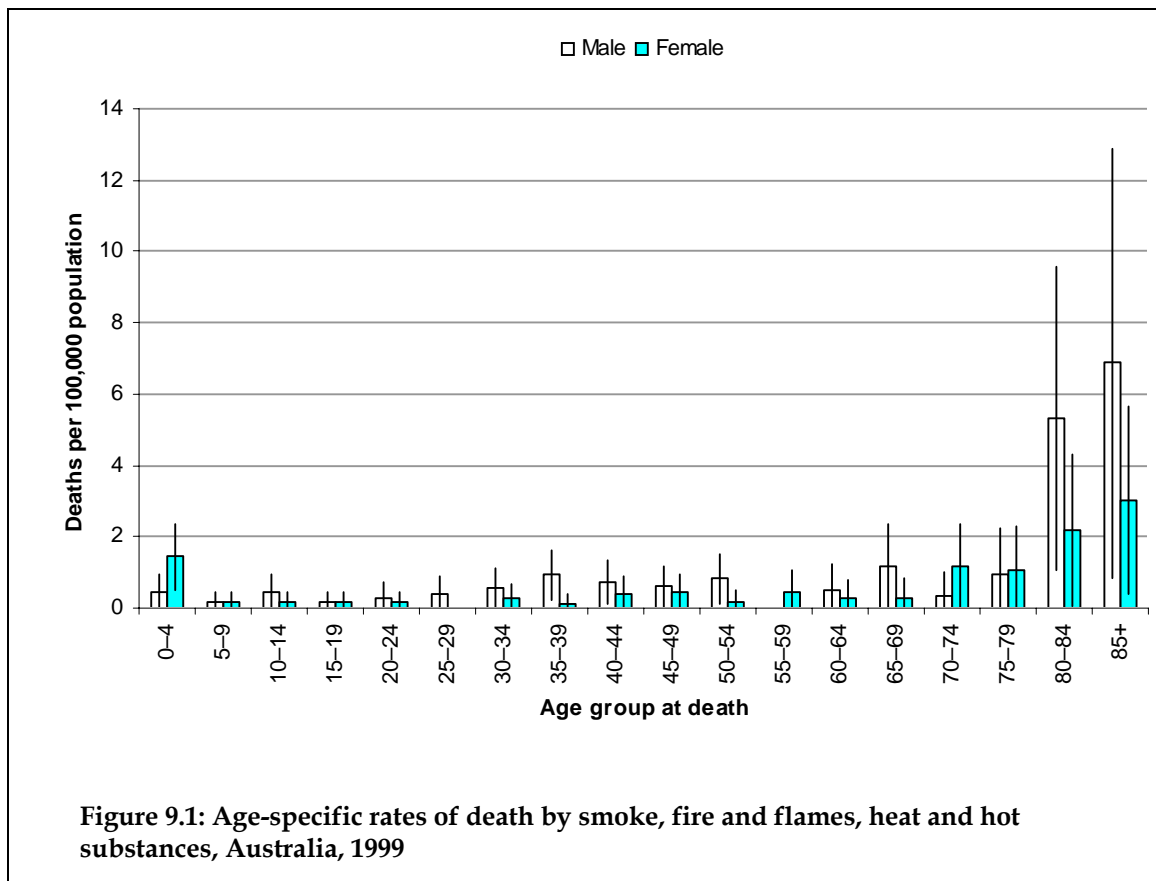
Of 134 deaths due to burns, or exposure to fire or hot substances that were registered in 1999, 101 (75%) were recorded as unintentional. The remainder were recorded as suicide (n=24; 18%), homicide (n=6; 5%) and undetermined intent (n=3; 2%). This chapter reports the deaths attributed to unintentional exposure to these External Causes of death.

Of the 101 cases recorded as being unintentional, about half were the result of an *Uncontrolled fire in building or structure* (n=52). *Clothing ignition* accounted for less than 4 deaths. All of these people were aged 65 years and over. The *Ignition of highly flammable materials* (e.g. petrol or kerosene) accounted for 8 deaths. A further 8 deaths were the result of *Scalds*. In most cases, deaths from scalds involved older people.

9.3 Age and sex distribution

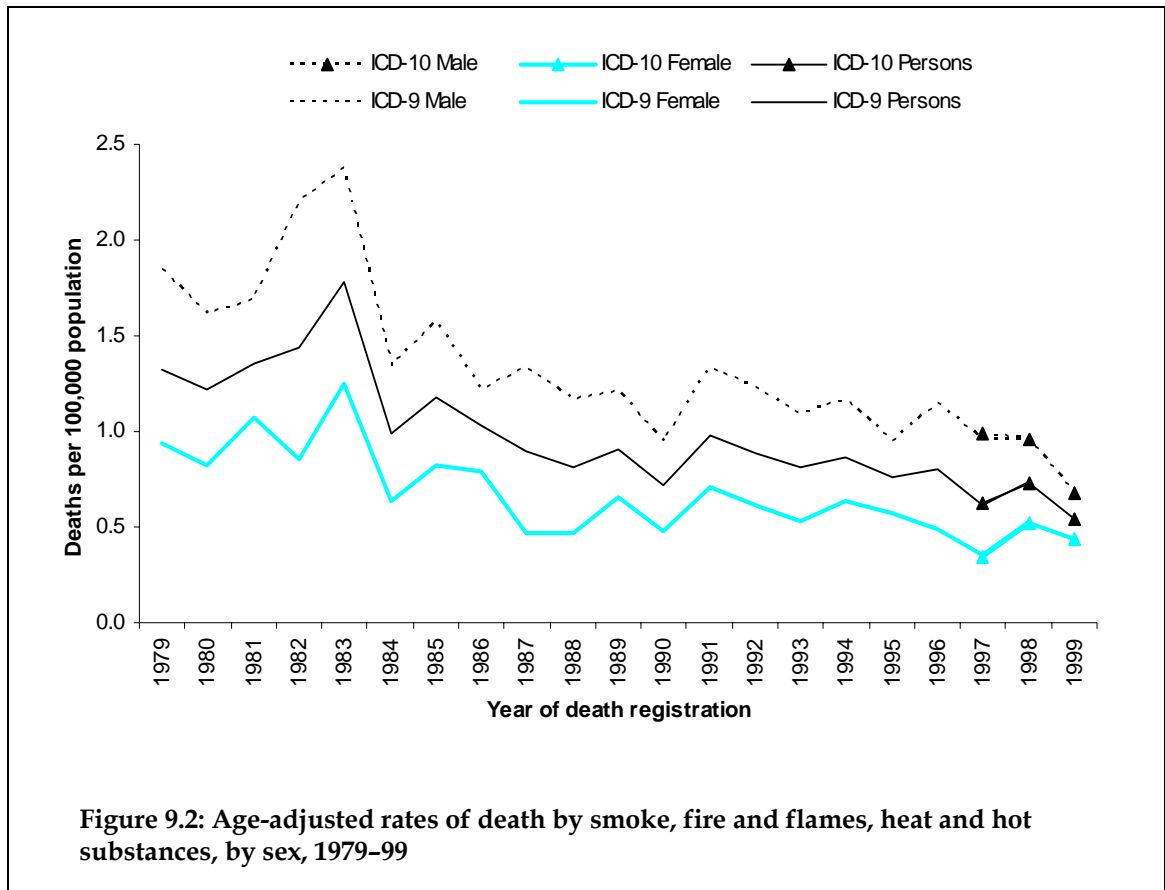
101 fires, burns and scalds deaths were registered in 1999, 24% fewer than in 1998.

The male adjusted rate was about twice the equivalent female rate. While there were differences between male and female rates in a number of age groups, none of these was statistically significant. (Confidence intervals are wide, reflecting the small numbers of cases of this type.)



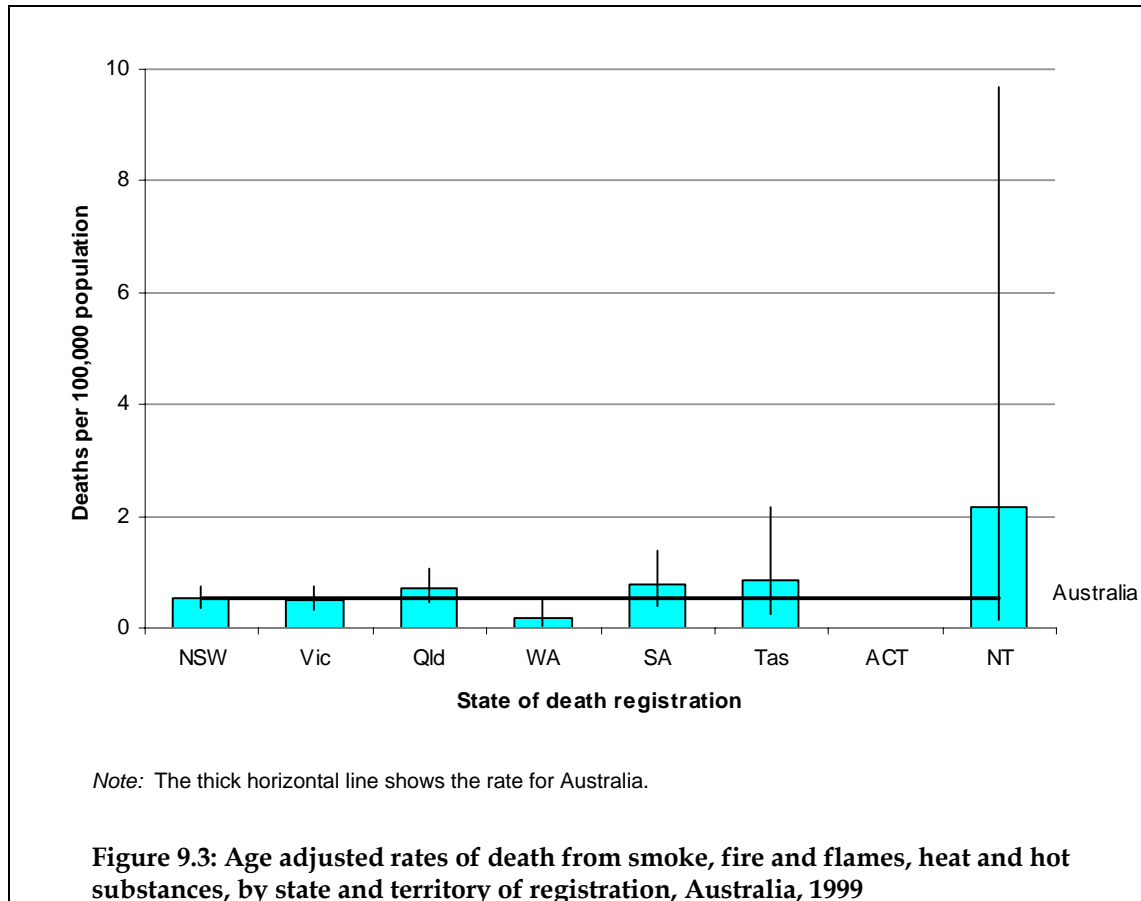
9.4 Trends in death rates

Annual rates fluctuate because of relatively small case numbers and because of clusters of cases for years in which bushfire disasters occurred. There has, however, been a general downward trend in rates, and the age-adjusted rate for persons in 1999 was 55% lower than in 1979.



9.5 State and territory differences

Small case numbers in this category limit meaningful comparison between states and territories.



9.6 Associated factors

26 of the 101 cases had been flagged to indicate that a drug was involved in the death. The *Drug Flag*, which was introduced in 1999, is described in Appendix 1: *Data Issues*. Of the 26 cases where a code had been assigned, 17 were classified as being alcohol-related, five were related to smoking tobacco, and eight involved some other type of drug.

The majority of deaths in this category occurred at home (n=63; 62%).

10 Other unintentional injury deaths, Australia

(ICD-9 E900–E909, E911–E923, E924.1, E925–E929)

(ICD-10 W20–W64, W75–W99, X20–X39, X50–X59, Y85, Y86, Y89.9)

The purpose of this section is to describe the types of unintentional injury deaths not covered elsewhere in this report. This residual category includes unintentional injury deaths that were not due to transport, falls, drowning, poisoning or effects of fire, smoke, heat, etc. It includes all injury deaths recorded as 'unintentional' and not covered by one of the sections covering these specific types of unintentional injury (sections 4, 6, 7, 8 and 9).

As a residual category, the overall values in this section do not have a well-defined meaning. It is also affected substantially by the transition to ICD-10. However, this category includes some more specific subcategories (such as non-intentional fatal injury by firearms, or by exposure to electricity) which are of interest but have relatively small case numbers.

Table 10.1: Key indicators for other unintentional injury deaths, Australia

Indicator	1998 ^(a)			1999 ^(b)		
	Males	Females	Persons	Males	Females	Persons
Cases	452	137	589	734	641	1,375
Percentage of all injury deaths	8.1%	5.9%	7.4%	12.5%	25.7%	16.4%
Crude rate per 100,000 population	4.9	1.5	3.1	7.8	6.7	7.3
Age standardised rate per 100,000 population	5.2	1.4	3.2	9.7	5.7	7.6
Age standardised rate per 100,000 population (CF adjusted)*	12.6	3.4	7.8	n/a	n/a	n/a
Average years potential life lost (YPLL) before age 75 years	31	22	29	31	15	27

* Standardised rates based on ICD-9, multiplied by the CF (2.435), to improve comparability with 1999 rates based on ICD-10 (see 2.1.2).

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E900–E909, E911–E923, E924.1, E925–E929.

(b) Deaths registered in 1999 for which UCoD code is ICD-10 W20–W64, W75–W99, X20–X39, X50–X59, Y85, Y86, Y89.9.

Note: Valid comparisons between 1998 and 1999 data are particularly difficult for this category, because of the effect of coding changes that have resulted from the transition to ICD-10. The main impact of this transition is that cases coded to E887 and included as 'Unintentional Falls' under ICD-9 are coded to the residual category 'Exposure to unspecified factor' (X59) under ICD-10. See Chapter 2: *Issues in reporting injury deaths*.

10.1 Transition to ICD-10

The scope of the residual category covered by this section differs between the two years considered, because of differences between ICD-9 and ICD-10. Hence comparisons between overall values for this section for the two years are not valid.

Most of this difference is due to the reassignment of cases which, under ICD-9, were coded to E887 *Fracture, cause unspecified*, a sub-category of *Unintentional falls*. Under ICD-10, this group of cases has been reassigned to X59 and now appears within the category *Other unintentional injury deaths* (see Figure 6.1).

Note that the values for 1999 shown in Table 10.1 include all deaths which were coded to X59 (*Exposure to unspecified factor*), including 752 such cases which are conceptually equivalent to the ICD-9 category E887 (*Fracture, cause unspecified*). In keeping with ICD-9, the values for deaths registered in 1998 and included in Table 10.1 do not include such cases (see Section 6.1 for details).

10.2 Overview

The 1,375 unintentional injury deaths included in this group for 1999 equate to a rate of six deaths per 100,000 population, and account for 16% of all injury deaths registered in the year.

This category includes many types of injury deaths.

860 (63%) of the 1,375 deaths were coded to X59 *Exposure to unspecified factor*. As noted above, most of these (n=752) would have appeared in the 'Unintentional falls' category, rather than the 'Other Unintentional' category if they had been coded under ICD-9.

Other common types of residual unintentional cases in 1999 were *Suffocation and choking as a result foodstuffs, non-food stuffs and mechanical means* (n=210, 15%); *Sequelae of accidents* (n=86, 6%); *Electrocution* (n=37, 3%); *Unintentional discharge firearms* (n=28, 2%); and *Contact with machinery* (n=22; 2%).

A complete listing of the Underlying Cause codes of deaths in this category is provided in Table 10.3.

Suffocation and choking as a result foodstuffs, non-food stuffs and mechanical means appears to be a larger cause of injury than was previously recognised. Cited as a cause in 514 additional deaths where the Underlying Cause was not an External Cause (see Chapter 10: *Deaths with Multiple Causes*), it accounts for a total of 724 deaths when added to the 210 attributed to it in the category *Other unintentional deaths*.

Table 10.2: Comparative frequency of other unintentional injury deaths by mechanism of injury, Australia 1998 and 1999

Mechanism of injury (based on groupings of ICD codes)	1998	1999	Sub-categories included
Cut/pierce	13	10	Cutting/piercing
Firearm	21	28	Firearm missile
Suffocation	187	210	Aspiration, food; Aspiration, non-food; Mechanical suffocation
Machinery	48	22	Machinery
Natural /environmental	61	53	Exposure/neglect/hunger/thirst; Excessive heat; Excessive cold; Explosion; Electric current
Struck by or against	69	41	Strike/struck by object or person; Struck by falling object
Other/unspecified (all categories)	190	259	Also includes Caught in or between objects; Dog bite
Sub-total	589	623	
Equivalent to Fracture, cause unspecified (E887)	—	752	Exposure to unspecified factor (X59) as Underlying Cause PLUS fracture as at least one additional cause
Total	589	1,375	

Table 10.3: Details of causes underlying Other unintentional injury deaths, Australia 1999

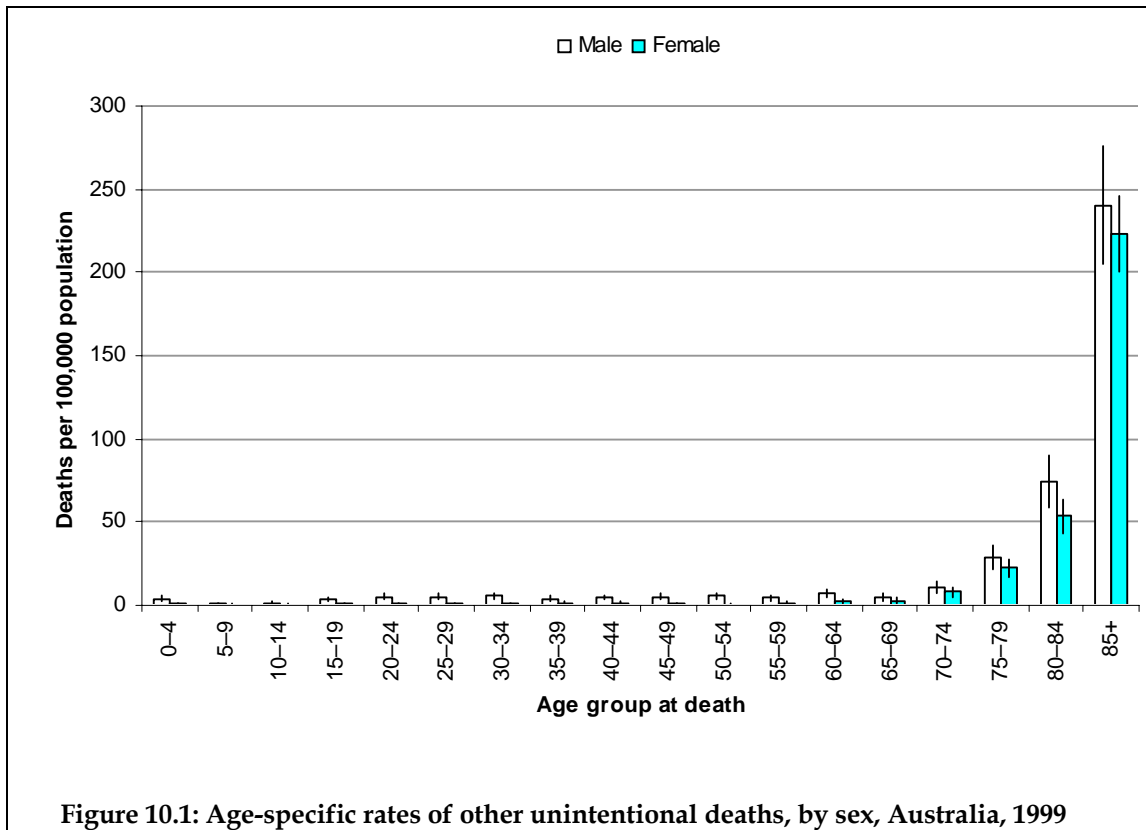
ICD-10 Code	Underlying cause of death ICD-10	Frequency	Percentage
W20	Struck by thrown, projected or falling object	31	2%
W21	Striking against or struck by sports equipment	..	
W22	Striking against or struck by other objects	6	0%
W23	Caught, crushed, jammed or pinched in or between objects	15	1%
W24	Contact with lifting and transmission devices, not elsewhere classified	4	0%
W25	Contact with sharp glass	4	0%
W26	Contact with knife, sword or dagger	..	
W29	Contact with other powered hand tools and household machinery	4	0%
W30	Contact with agricultural machinery	6	0%
W31	Contact with other and unspecified machinery	12	1%
W32	Handgun discharge	..	
W33	Rifle, shotgun and larger firearm discharge	7	1%
W34	Discharge from other and unspecified firearms	20	2%
W38	Explosion and rupture of other specified pressurised devices	..	
W40	Explosion of other materials	..	
W44	Foreign body entering into or through eye or natural orifice	..	
W45	Foreign body or object entering through skin	..	
W49	Exposure to other and unspecified inanimate mechanical forces	6	0%
W50	Hit, struck, kicked, twisted, bitten or scratched by another person	..	
W51	Striking against or bumped into by another person	..	
W55	Bitten or struck by other mammals	4	0%
W64	Exposure to other and unspecified animate mechanical forces	..	
W75	Unintentional suffocation and strangulation in bed	14	1%
W76	Other unintentional hanging and strangulation	77	6%
W77	Threat to breathing due to cave-in, falling earth and other substances	..	
W78	Inhalation of gastric contents	27	2%
W79	Inhalation and ingestion of food causing obstruction of respiratory tract	26	2%
W80	Inhalation and ingestion of other objects causing obstruction of respiratory tract	13	1%
W83	Other specified threats to breathing	6	1%
W84	Unspecified threat to breathing	45	3%
W85	Exposure to electric transmission lines	8	1%
W86	Exposure to other specified electric current	14	1%
W87	Exposure to unspecified electric current	15	1%
W94	Exposure to high and low air pressure and changes in air pressure	..	
X20	Contact with venomous snakes and lizards	4	0%
X21	Contact with venomous spiders	..	
X25	Contact with other specified venomous arthropods	..	
X30	Exposure to excessive natural heat	5	0%
X31	Exposure to excessive natural cold	13	1%
X33	Victim of lightning	..	
X38	Victim of flood	10	1%
X39	Exposure to other and unspecified forces of nature	..	
X53	Lack of food	5	0%
X58	Exposure to other specified factors	..	
X59*	Exposure to unspecified factor	860	63%
Y85	Sequelae of transport accidents	31	2%
Y86	Sequelae of other accidents	47	3%
Y89	Sequelae of other External Causes	8	1%
Total		1,375	100%

* By far the largest proportion of deaths included in Table 10.3 above are those assigned to the ICD-10 code X59 *Exposure to unspecified factor* (n=860; 62.5%). It is known that most of the deaths coded to X59 were coded under ICD-9 to the Unintentional Falls category E887 *Fracture, cause unspecified* (see Chapter 6 for further details).

.. Case counts are not shown where the cell count is less than 4.

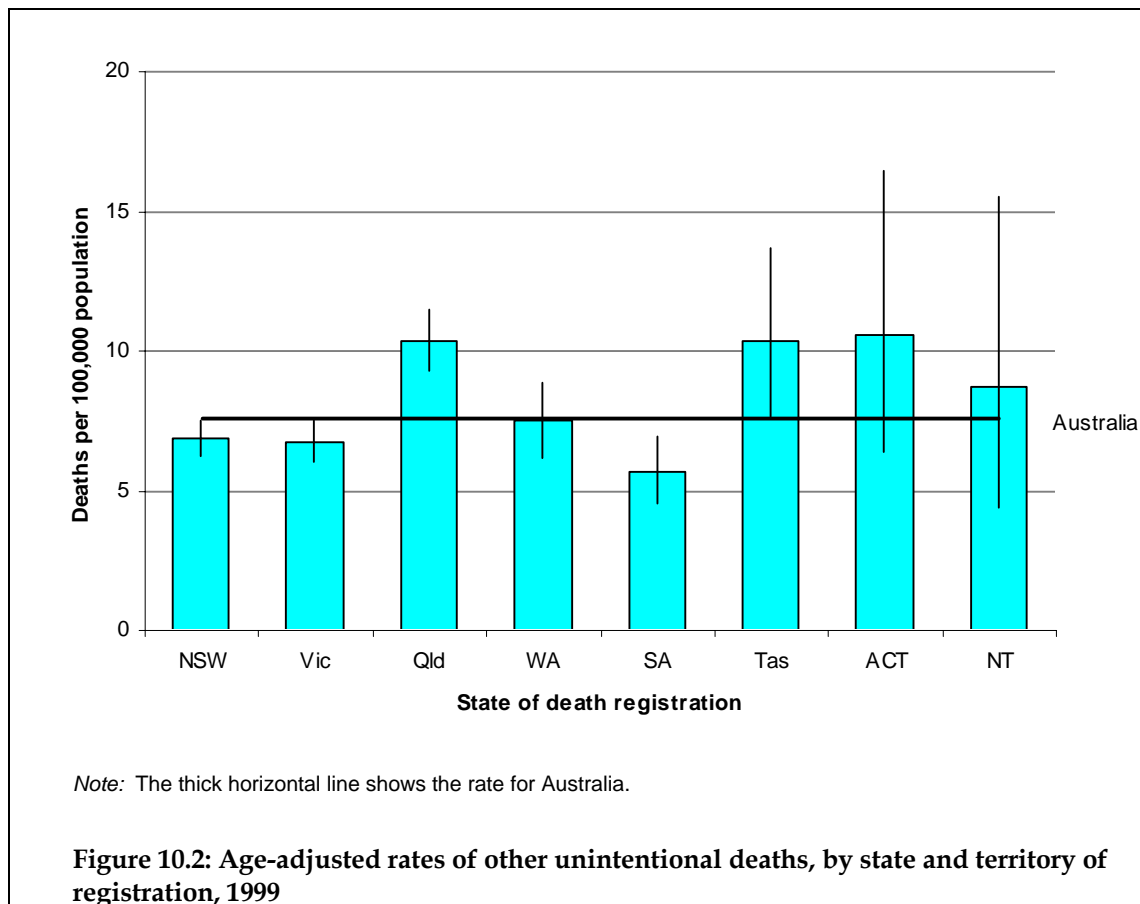
10.3 Age and sex distribution

As with most other External Causes of injury deaths, male rates were higher than female rates. Males tended to have much larger rates throughout, and significantly so in all five year age groups between 15–19 years and 60–64 years. Work-related deaths are likely to contribute to this male excess. A smaller differential in the male:female ratio for the age group 75 years and over is primarily related to an influx of cases which had previously, under ICD-9, been coded to the *Unintentional Falls* category E887 *Fracture, cause unspecified* (see Chapter 6 for further details).



10.4 State and territory differences

Rates for this residual category of unintentional injury deaths did not differ significantly between states and territories, with the exception of South Australia which had the lowest rate.



11 Homicide deaths, Australia

(ICD-9 E960–E978, E990–E999)

(ICD-10 X85–Y09)

Table 11.1: Key indicators for homicide deaths, Australia

Indicator	1998 ^(a)			1999 ^(b)		
	Males	Females	Persons	Males	Females	Persons
Cases	210	104	314	210	96	306
Percentage of all injury deaths	3.7%	4.5%	4.0%	3.6%	3.9%	3.7%
Crude rate per 100,000 population	2.3	1.1	1.7	2.2	1.0	1.6
Age standardised rate per 100,000 population (CF 1.00)	2.2	1.1	1.7	2.2	1.0	1.6
Average years potential life lost (YPLL) before age 75 years	39	38	39	40	38	39

* Estimated comparability factor based on analysis of a set of 1998 Australian deaths data coded to both ICD-9 and ICD-10.

(a) Deaths registered in 1998 for which UCoD code is ICD-9 E800–E999.

(b) Deaths registered in 1999 for which UCoD code is ICD-10 V01–Y98.

11.1 Age and sex distribution

The 306 deaths registered to this category in 1999 accounted for 4% of all injury deaths.

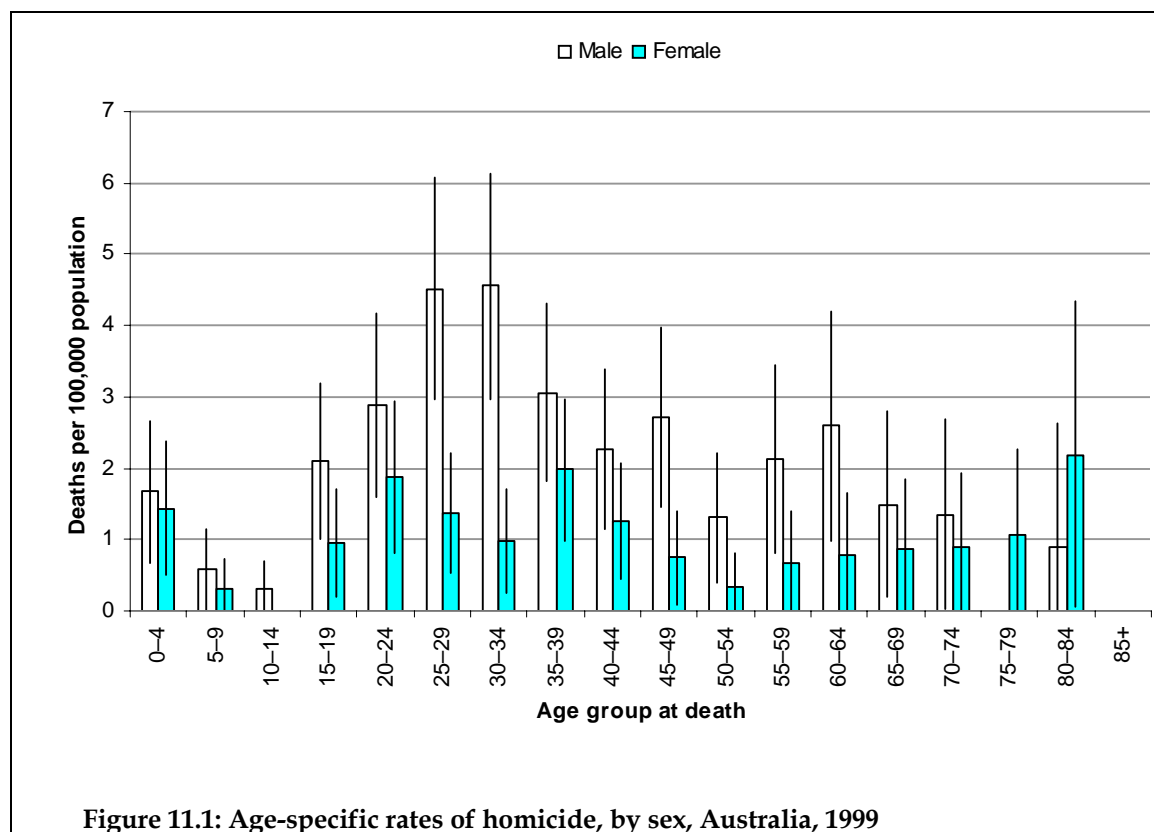
Of the 210 male deaths registered in 1999, 32% (n=67) were due to *Assault by a Cutting or piercing instrument*, 24% (n=50) resulted from *Assault by Bodily force or by a blunt object*, and 20% (n=43) were due to *Assault by firearms*. 59% of the male homicides (n=123) occurred to males in the age range 20–44 years.

For females, assault by a *Cutting or piercing instrument* accounted for 24% (n=23), and *Assault by hanging, strangulation and suffocation* accounted for 19% (n=20). The third most frequent category was *Assault by bodily force or by a blunt object* (18%; n=17).

20 deaths were at ages 0–4 years, and another six died at ages 5–9 years.

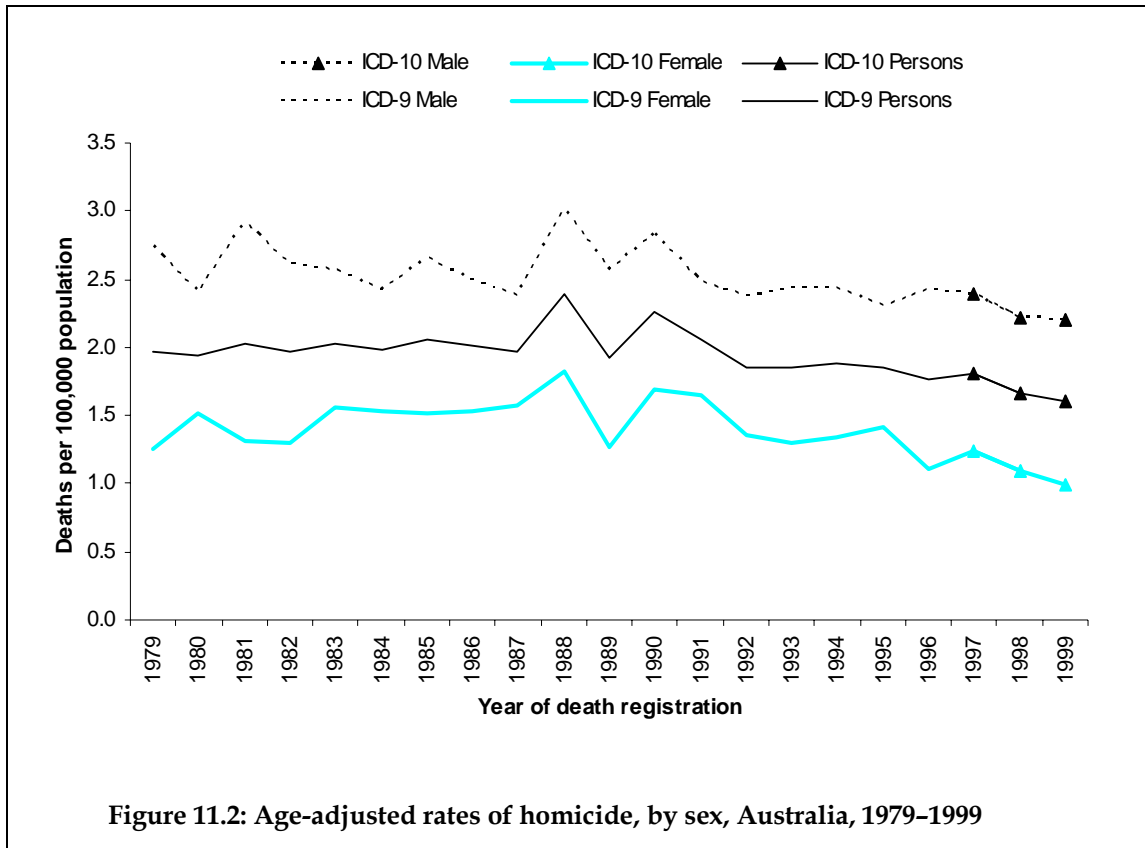
A firearm was used in 54 (18%) homicides in 1999. A *Rifle, shotgun or larger firearm* was coded as having been used in 22 cases (41%), and a *Handgun* in nine cases (17%). In 19 homicides, an *Other or unspecified firearm* was used. A further four cases were the result of *Legal intervention involving firearm discharge*.

Male rates were greater than female rates overall, and at young adult ages.



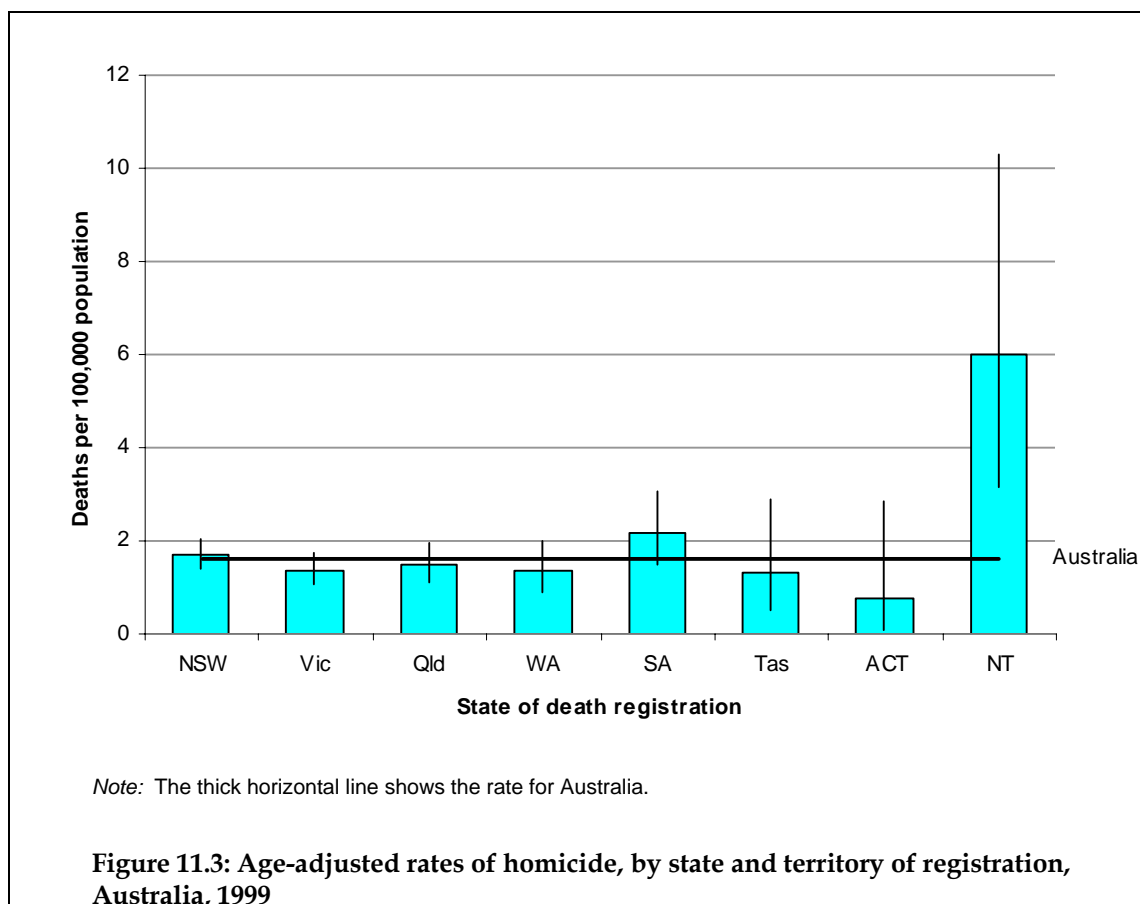
11.2 Trends in death rates

There was a slight downward trend in age-adjusted homicide death rates during the 1990s, particularly for females.



11.3 State and territory differences

As in previous years, the rate of homicide for the Northern Territory was well above the national rate. 7 of the 13 people registered as dying due to homicide in the Northern Territory in 1999 were recorded as being Aboriginal or Torres Strait Islander persons.



12 Multiple causes of death

In 1999, the total number of deaths registered from all causes in Australia was 128,102. Of these, 8,361 deaths had an UCoD code referring to an External Cause (ICD-10, V01–Y89). These deaths are the subject of Chapters 3–11 of this report.

Some parts of the analysis of these 'External Causes' deaths (notably in Chapters 6 and 8) made use of the MCoD data provided by the ABS, beginning with deaths registered in 1997. For deaths registered in 1999, provision was made for up to 20 such codes to be recorded for each death, in addition to the UCoD (see also *Appendix 1: Data Issues*).

In Chapter 6 (Falls), Multiple Causes information is used to overcome a problem resulting from a difference between ICD-9 and ICD-10, which results in the movement of a large number of cases from 'Unintentional Falls' to unspecified accidents.

In Chapter 8 (Poisoning), Multiple Causes information is used to investigate variations in whether deaths involving poisoning are assigned an External Cause code as the UCoD.

In this chapter, we consider briefly all deaths registered in 1999 which were NOT assigned an External Cause as the UCoD, but WERE assigned an External Cause code (ICD-10, V01–Y89) as a MCoD.

Of the 119,741 deaths registered in 1999 which do not have an External Cause as the Underlying Cause, 5,127 have at least one External Cause code as a Multiple Cause and 3,671 have at least one Injury and Poisoning code from Chapter XIX.

12.1 Age and sex distribution

The 5,127 cases that are the focus of this chapter involved a slightly higher proportion of males (n=2,671, 52%) than females (n=2,456, 48%). 79% (n=4,068) of the cases were deaths of people aged 60 years and over.

12.2 Major causes of death

The MCoD codes which were External Causes from ICD-10 Chapter XX were categorised according to the same scheme as was used in Chapters 3–11 of this report. Their distribution among these categories is shown in Table 12.1.

Table 12.1: External Cause codes allocated as Multiple Causes of Death to the 5,127 Natural Causes deaths registered in Australia in 2000 with one or more ICD-10 Chapter XX codes in MCoD fields

Major group	No. of MCoDs	Percentage
Complications of surgical and medical care (ICD-10 Y60–Y69)	2,457	48%
Falls (ICD-10 W00–W19; ICD-10 revised for comparability with ICD-9 E880–E888 W00–W19; or X59 and any Multiple Cause code S02, S12, S32, S42, S52, S62, S72, S82, S92, T02, T08, T10, T12, or T14.2)	1,402	27%
Other unintentional (ICD-10 W20–W64, W75–W99, X20–X39, X50–X59, Y85, Y86, Y89.9)	779	15%
Unintentional poisoning by pharmaceuticals (ICD-10 X40–X44)	372	7%
Unintentional poisoning by other substances (X45–X49)	76	2%
Drowning (ICD-10 W65–W74)	15	0%
Transport (ICD-10 V01–V99)	14	0%
Homicide (ICD-10 X85–Y09)	9	0%
Fire (ICD-10 X00–X19)	5	0%
Suicide (ICD-10 X60–X84)	..	
Undetermined intent (ICD-10 Y10–Y34)	8	0%
Total number of cases coded to ICD-10 Chapter XX	5,140*	100%

* Number of assigned MCoD values is greater than the number of deaths because up to 19 causes can be assigned to each death. In some cases, this means that there is some overlap between the designated categories.

Table 12.1 shows that the largest major cause groups are, in order of frequency: Complications of Surgical and Medical care; Falls; Other Unintentional Injuries; Unintentional Poisoning by Pharmaceuticals; and Unintentional Poisoning by other Substances. These groups are described in detail here.

12.2.1 Complications of surgical and medical care

This category falls outside the scope of this report (see sub-section 12.3). For this reason only information about its age and sex profile are included here.

Of the 2,457 cases in this category, 56% (n=1,497) were male and 44% (n=1,173) were female. The cases were clustered in older age groups, with 81% (n=2,156) being aged 60 years or more.

12.2.2 Falls

Of the 1,402 cases which met the criteria for inclusion in this category, 900 (64%) were females and 502 (36%) were males. Deaths in this category were concentrated in older age groups. 98% were people aged 60 years and over; 85% were aged 75 years and over.

By far the most commonly sustained injury, derived from an examination of injury and poisoning codes from ICD-10 Chapter XIX (of which 1,511 were assigned to this category), were injuries to the hip and thigh (n=1,031; 68%).

The three most commonly coded Underlying Causes of death in this category were Diseases of the circulatory system (n=671, 48%); Neoplasms (n=191, 14%); and Diseases of the respiratory system (n=171, 12%).

12.2.3 Other unintentional injury

There were 779 cases in this category. 441 (57%) were males, 338 (43%) were females. As for falls, cases in this category were concentrated in older age groups. 79% (n=619) were persons aged 60 years and over; 56% (n=437) were persons aged 75 years and over.

A substantial proportion of the total of 837 External Cause codes assigned to this category were deaths that resulted from 'Accidental threats to breathing' (n=517; 62%). Within this broader ICD-10 group, the codes most commonly assigned were for *Inhalation and ingestion of other objects causing obstruction of respiratory tract* (n=154); *Inhalation of gastric contents* (n=98); and *Inhalation and ingestion of food causing obstruction of respiratory tract* (n=33).

12.2.4 Unintentional poisoning by pharmaceuticals

372 cases met the criteria for inclusion in this category. 276 (74%) of these were males. The male cases were concentrated in the age range 20-44 years (n=219; 79% of all male cases).

A major proportion of this category had, as a UCoD, a code from ICD-10 Chapter V Mental and Behavioural disorders (n=315; 85%). With one exception, the codes assigned from this chapter identified the use of drugs or alcohol. The most frequent subcategories within this group of codes were Opioid dependence (n=215, 58%) and Multiple drug dependence (n=90, 24%).

12.2.5 Unintentional poisoning by other substances

Of the 76 cases in this category, 59 (78%) were males. The male cases were concentrated in the age range 25-54 years (n=47, 78%).

A total of 117 External Cause codes were assigned to this category in the form of MCoDs. 64 (55%) of these were codes for *Unintentional poisoning by and exposure to alcohol*. A further four codes were assigned for *Accidental poisoning by and exposure to other gases and vapours*. Of the balance, 32 (65%) were codes associated with unintentional poisoning by pharmaceutical agents. It is apparent from this that alcohol and pharmaceuticals are often used in conjunction with one another and, for this reason, there is likely to be considerable overlap between the cases in this category and the previous one, 'Unintentional poisoning by pharmaceuticals'.

12.3 Evaluation

For many purposes, 'injury deaths' have been defined as those given an External Cause code as the Underlying Cause of Death. Multiple Cause of Death codes enable identification of a large number of additional deaths in which injury and poisoning, or their External Causes, appear to be involved.

Should all or some of these 'additional' injury deaths be included for purposes such as routine surveillance of injury mortality?

The role played by injury and External Causes in the 5,127 deaths in which codes for these conditions and causal factors appear only in Multiple Cause of Death fields, might not be the same as in the 8,361 deaths in which the Underlying Cause is an External Cause code. For example, an unintentional fall mentioned as a Multiple Cause might, typically, have had a less direct causal role than a fall mentioned as the Underlying Cause.

Nevertheless, at least some 'additional' injury deaths are likely to be sufficiently similar to the deaths usually reported as injury to warrant inclusion. Selection of 'additional' injury deaths for inclusion requires decisions on conceptual scope, and technical assessment of cases for similarity. Here are examples of these issues:

Conceptual scope: For some purposes, it might be decided to distinguish Complications of Medical and Surgical Care – much of the most common External Causes among natural causes deaths – from other External Causes of injury. Emerging international criteria for injury indicators provide a basis for such decisions (Langley J & Brenner R 2003).

Technical assessment: Section 8.1 provides an example of internal analysis of Multiple Causes mortality data to assess whether certain 'additional' cases should be included. This approach is constrained by the limited case information in the ABS mortality file. Coroner records contain more information, but most of the candidate cases (79%) were not referred to a coroner. Linkage to sources such as electronic hospital discharge summary records offers some potential, but direct examination of hospital files might be necessary.

13 References

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Appendix 1: Data issues

Data sources

Deaths data are from the Australian Bureau of Statistics (ABS) mortality unit record data collection, 1979–99. Population data were obtained from the ABS.

Transition from ICD-9 to ICD-10

Beginning with deaths registered in 1999, the Australian Bureau of Statistics has coded Australian Mortality Data according to the 10th Revision of the International Classification of Diseases (ICD-10) (World Health Organization 1992). From 1979 until 1998, national deaths data were coded according to the 9th Revision of ICD (World Health Organization 1977).

The transition from ICD-9 to ICD-10 has affected comparability between 1999 data and that from previous years. This issue is discussed in detail in Chapter 2, and some specific effects of the transition are dealt with elsewhere in the report.

Cause code aggregations

NISU statistical publications have traditionally made use of standard aggregations of the ICD-9 External Cause (E-code) classification. With the introduction of ICD-10 at the beginning of 1999, a map was developed by NISU in order to arrive at an equivalent set of standard aggregations under the new classification scheme (see Table 3.2). The E-code equivalents of most groups presented in this report are noted in the text. This practice was not possible for some categories such as cases of ‘hidden’ drowning (see Table 7.2).

The aggregation used for Table 3.2 follows the approach described in the report Recommended Framework for Presenting Injury Mortality Data (Centers for Disease Control and Prevention 1997).

Years of potential life lost

This report has applied the method used by the Australian Bureau of Statistics for calculating years of potential life lost (YPLL) with one change. The ABS estimated YPLL for ages 1-75 years, inclusive. We have calculated YPLL for ages 0-74 years, inclusive. The methodology is described in the following extract, with our amendments in italics, from the ABS publication 3303.0 Causes of Death Australia 1999.

Estimates of YPLL were calculated for deaths of persons aged 0-74 years (i.e. <75 years) based on the assumption that deaths occurring at these ages are untimely. A number of variables are used in these calculations, as described below.

YPLL is derived from:

$$YPLL = \sum_x (D_x (74 - A_x))$$

Where:

A_x = adjusted age at death. As age at death is only available in completed years, the midpoint of the reported age was chosen (e.g. age at death 34 years was adjusted to 34.5).

D_x = registered number of deaths at age x due to a particular cause of death.

Age adjustment

Most all-ages rates have been adjusted for age to overcome the effect of differences in the proportions of people of different ages (and different injury risks) in the populations that are compared. Direct standardisation was employed, taking the Australian population in 2001 as the standard. Changes in age composition are small within narrow age bands (e.g. 65-69 years) and adjustment has not been applied to five-year age groups. Where crude rates are reported, this is noted.

Confidence intervals

Nearly all deaths are believed to be included in the sources used for this report, so sampling errors do not apply to these data. However, the time periods used to group the cases (e.g. calendar years) are arbitrary. Use of another period (e.g. April to March) would result in different rates. The 95% confidence intervals of these rates are based on a Poisson assumption about the number of cases in a time period. Chance variation alone would be expected to lead to a rate outside the 95% confidence interval on 5% of occasions. Confidence intervals were calculated using the methods described by Anderson and Rosenberg (Anderson & Rosenberg 1998). Asymmetric confidence intervals were calculated for case numbers up to 100. Symmetrical intervals, based on a normal approximation, were calculated where case numbers exceed 100.

Case definition

The Underlying Cause of each death (UCoD) registered in Australia is classified by the ABS according to the International Classification of Diseases (ICD). The 9th Revision (ICD-9) was used for death registrations between 1979 and 1998 (World Health Organization 1977). The 10th Revision (ICD-10) was used for deaths registered in 1999 (World Health Organization 1992). All deaths given an ICD-9 External Cause code (Registrations in 1998) or an ICD-10 External Cause code (Registrations in 1999) by the ABS are included in this report.

In general, the inclusion criterion used for the report was that the UCoD was an External cause. Additional cases are included in some sections, as described in the text.

Data are presented according to the year in which deaths were registered. 7% of injury deaths registered in 1999 occurred in an earlier year. A similar proportion of deaths which occurred in 1999 will not have been registered until after 1999. Information on these cases is not yet available. State-specific data are presented on the basis of the State or Territory in which death was registered. This is normally the one in which death occurred.

Multiple causes of death

Until the end of 1996, the ABS coded only one cause for each death. This is the Underlying Cause (UCoD) which the Bureau defines as being 'the disease or injury which initiated the train of morbid events leading directly to death' (in keeping with WHO rules). The Underlying Cause is derived from information on the death certificate according to rules that form part of the *International Classification of Diseases*.

Beginning with deaths registered in 1997, other morbid conditions, diseases and injuries entered on the death certificate were also coded as Multiple Causes of Death (MCoDs). Up to 13 MCoDs may be recorded for each death, with one of the MCoDs being a duplicate of the UCoD for that death.

Where they are assigned, MCoD codes can provide additional information about deaths where the UCoD was an External Cause (injury or poisoning). MCoDs also make it possible to identify an additional subset of deaths, namely those where the UCoD was not an External Cause, but where one or more External Causes have been specified on the death certificate as having contributed to the death. Information about the latter group of deaths that occurred in 1999 is summarised in Chapter 12: Deaths with Multiple Causes.

Time series and Comparability factors

Time trends have been presented, where possible, for the period 1979–1999. Australian deaths data registered in the period 1979–1998 were classified according to the 9th Revision of the International Classification of Diseases (ICD-9) and, for 1999, to the 10th Revision of the International Classification of Diseases (ICD-10). The change to ICD-10 has had an impact on the ability to produce meaningful time trends for some aspects of injury. This is discussed in Chapter 2: Issues in reporting injury deaths. Charts and tables showing rates before and after this transition have been made more comparable by means of 'Comparability Factors'.

The Comparability Factors used in this report are based on analysis of 1998 data, which were coded by the ABS to ICD-9 and ICD-10.

ICD-9 based rates in tables showing rates for 1998 (ICD-9) and 1999 (ICD-10) have been multiplied by the Comparability Factors. These adjustments allow for changes in the scope of case inclusion under the two revisions of the ICD.

Data quality

The reliability of information about cause of death depends on the reliability of ICD codes provided by the ABS. This depends largely on the adequacy of the information provided to the ABS through Registrars of Births, Deaths and Marriages, and originating from coroners and medical practitioners. Little published information is available on the quality of the data resulting from this process, particularly as it applies to injury deaths. Centralisation of mortality coding in the Brisbane office of the ABS since the mid 1990s has reduced the potential for variation due to local differences in coding practice. However, factors affecting information recording, provision, or coding could affect data in different ways for different jurisdictions, periods or population groups. Hence, apparent differences should be interpreted with caution.

Drug Flag

The ABS introduced a *Drug Flag* in 1999 in order to increase the level of detailed information about the role played by drugs in Australian deaths. The sub-categories employed are:

- 1 Smoking related death
- 2 Alcohol related death
- 3 Drug other than alcohol or Tobacco
- 4 Combination of 1 and 2 (i.e. Tobacco *plus* Alcohol)
- 5 Combination of 1 and 3 (i.e. Tobacco *plus* Drug other than alcohol)
- 6 Combination of 2 and 3 (i.e. Alcohol *plus* Drug other than alcohol)
- 7 Combination of 1, 2 and 3 (i.e. Tobacco *plus* Alcohol *plus* Drug other than alcohol)

Caution should be exercised in interpreting data grouped according to this flag because coding criteria have not been specified and we are not aware of published validation.

Firearms Flag

In response to an expressed public interest in the details of firearms associated with Australian deaths, the ABS has introduced a *Firearms Flag* with the following subcategories: Handgun; Shotgun; Hunting rifle; Military firearms; Other firearms; Unspecified firearms. The subcategories are derived from those that were provided in ICD-9.

Suppression of small cell counts in data tables

Cell counts in tables that are four cases or fewer have been suppressed, as have rates derived from them, to protect confidentiality and because values based on very small numbers are difficult to interpret.

Appendix 2: Summary data tables

Table A2.1: Counts, age-specific rates and male to female rate ratio of death registrations by five-year age groups for males, females, and persons; Australia, 1998^(a)

Age group (years) ^(b)	Males		Females		Persons		M:F Rate Ratio
	Case counts	Rates	Case counts	Rates	Case counts	Rates	
0–4	103	15.6	68	10.8	171	13.3	1.5
5–9	36	5.3	18	2.8	54	4.1	2.0
10–14	53	7.9	27	4.2	80	6.1	2.0
15–19	373	56.6	131	20.9	504	38.4	2.8
20–24	635	94.5	153	23.4	788	58.1	4.2
25–29	686	93.8	123	16.8	809	55.0	5.6
30–34	610	86.8	127	17.9	737	52.3	4.8
35–39	553	74.1	159	21.1	712	47.6	3.5
40–44	428	61.6	131	18.7	559	39.9	3.3
45–49	351	53.6	104	15.9	455	34.9	3.4
50–54	320	54.0	121	21.1	441	38.0	2.6
55–59	229	51.0	80	18.5	309	35.2	2.9
60–64	190	51.1	88	23.6	278	37.6	2.2
65–69	216	64.4	85	24.4	301	44.1	2.5
70–74	194	67.3	122	36.8	316	51.3	1.6
75–79	203	101.1	140	52.1	343	73.2	1.5
80–84	161	145.3	190	104.4	351	121.0	0.8
85+	273	400.2	464	296.0	737	328.6	0.6
All ages	5,614	63.3	2,331	23.6	7,945	43.0	2.4

(a) Deaths registered in 1998 where the UCoD was an External Cause code in the range E800–E999 (ICD-9).

(b) Age was not reported for one case.

Table A2.2: Counts, age-specific rates and male to female rate ratio of death registrations by five-year age groups for males, females, and persons; Australia, 1999^(a)

Age group (years) ^(b)	Males		Females		Persons		M:F Rate Ratio
	Case counts	Rates	Case counts	Rates	Case counts	Rates	
0–4	107	16.2	69	11.0	176	13.7	1.6
5–9	36	5.2	29	4.4	65	4.8	1.2
10–14	51	7.5	34	5.3	85	6.4	1.5
15–19	385	57.8	124	19.5	509	39.1	3.1
20–24	630	95.5	154	24.0	784	60.3	4.1
25–29	746	102.2	167	22.8	913	62.4	4.5
30–34	622	88.7	161	22.6	783	55.4	3.9
35–39	545	72.6	147	19.4	692	45.9	3.7
40–44	474	67.1	152	21.3	626	44.1	3.1
45–49	373	56.3	136	20.4	509	38.3	2.7
50–54	313	51.0	108	18.1	421	34.7	2.9
55–59	229	48.8	82	18.1	311	33.7	2.8
60–64	204	53.0	78	20.3	282	36.7	2.6
65–69	186	55.7	77	22.2	263	38.7	2.4
70–74	223	75.7	111	33.3	334	53.2	2.0
75–79	229	107.9	162	57.7	391	79.3	1.4
80–84	211	187.4	194	106.0	405	137.0	1.1
85+	301	413.5	507	305.2	808	338.2	0.6
All ages	5,865	65.5	2,492	24.7	8,357	44.5	2.4

(a) Deaths registered in 1999 where the UCoD was an External Cause code in the range V00–Y89 (ICD-10).

(b) Age was not reported for four cases.

Table A2.3: Death registrations – counts and age-specific rates for males, females and persons by five-year age groups for states and territories; Australia, 1998^(a)

Age group (years)	NEW SOUTH WALES						VICTORIA					
	Males		Females		Persons		Males		Females		Persons	
	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	41	18.3	23	10.8	64	14.6	17	10.6	18	11.8	35	11.2
5–9	8	3.5	4	1.8	12	2.7	8	4.8	4	2.5	12	3.7
10–14	18	8.0	10	4.7	28	6.4	17	10.6	5	3.2	22	7.0
15–19	112	51.2	26	12.5	138	32.3	87	54.9	27	17.8	114	36.7
20–24	219	98.8	48	22.2	267	61.1	118	70.9	38	23.3	156	47.3
25–29	214	87.8	38	15.4	252	51.4	147	80.4	29	15.5	176	47.6
30–34	205	86.4	37	15.5	242	50.8	126	71.5	40	22.1	166	46.5
35–39	205	80.5	43	16.9	248	48.7	89	48.6	30	16.1	119	32.2
40–44	143	60.9	39	16.5	182	38.7	77	45.2	29	16.6	106	30.7
45–49	118	53.9	34	15.6	152	34.8	76	47.9	17	10.5	93	29.0
50–54	103	51.3	38	19.7	141	35.8	75	52.3	29	20.3	104	36.3
55–59	77	50.3	35	23.5	112	37.1	58	52.2	11	10.1	69	31.4
60–64	63	48.6	38	29.2	101	38.9	36	38.5	20	20.9	56	29.6
65–69	74	62.6	30	24.2	104	43.0	55	64.4	20	22.2	75	42.7
70–74	76	74.6	45	38.0	121	55.0	44	59.8	18	20.9	62	38.8
75–79	78	108.9	42	43.7	120	71.6	37	73.2	37	53.3	74	61.7
80–84	61	155.8	54	82.7	115	110.1	28	99.7	47	100.5	75	100.2
85+	102	441.1	159	288.8	261	333.9	58	320.3	128	306.7	186	310.8
Total	1,917	64.0	743	21.9	2,660	42.3	1,153	52.2	547	21.6	1,700	36.7

continued

- (a) Deaths registered in 1998 where the UCoD was an External Cause code in the range E800–E999 (ICD-9).
(b) Total rates are age-standardised rates, while the others in this table are age-specific.

Table A2.3 (continued): Death registrations – counts and age-specific rates for males, females and persons by five-year age groups for states and territories; Australia, 1998^(a)

Age group (years) ^(c)	QUEENSLAND						SOUTH AUSTRALIA					
	Males		Females		Persons		Males		Females		Persons	
	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	21	16.8	16	13.5	37	15.2	9	18.4	4	8.6	13	13.6
5–9	8	6.2	..	2.4	11	4.4	..	5.8	..	0.0	..	3.0
10–14	9	7.0	4	3.3	13	5.2	..	5.8	..	4.0	5	4.9
15–19	71	55.9	38	31.3	109	43.9	31	61.7	11	23.0	42	42.8
20–24	130	102.4	26	20.9	156	62.1	51	100.4	4	8.2	55	55.4
25–29	121	88.8	21	15.4	142	52.1	62	112.1	10	18.6	72	66.0
30–34	123	96.8	23	17.9	146	57.1	46	84.0	7	12.9	53	48.7
35–39	122	90.0	38	27.6	160	58.5	41	69.9	15	25.4	56	47.6
40–44	90	70.9	28	21.9	118	46.3	35	63.5	13	23.4	48	43.3
45–49	82	66.9	28	23.3	110	45.3	29	55.2	9	16.8	38	35.9
50–54	61	54.7	25	23.6	86	39.6	30	63.5	12	25.2	42	44.3
55–59	43	51.6	16	20.4	59	36.4	16	44.3	9	24.9	25	34.6
60–64	45	67.3	11	17.1	56	42.7	15	48.4	8	25.1	23	36.6
65–69	37	63.1	16	26.9	53	44.9	18	61.5	5	16.2	23	38.2
70–74	30	60.1	25	45.3	55	52.3	16	59.7	18	58.2	34	58.9
75–79	36	102.1	27	60.0	63	78.5	20	106.1	12	46.5	32	71.7
80–84	22	112.2	42	138.0	64	127.9	14	132.0	20	114.8	34	121.3
85+	52	430.5	83	324.1	135	358.2	18	279.9	34	221.9	52	239.0
Total^(b)	1,103	67.5	470	26.9	1,573	47.0	457	63.2	194	23.0	651	42.9

continued

..Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1998 where the UCoD was an External Cause code in the range E800–E999 (ICD-9).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

(c) Age was not reported for one case.

Table A2.3 (continued): Death registrations – counts and age-specific rates for males, females and persons by five-year age groups for states and territories; Australia, 1998^(a)

Age group (years)	WESTERN AUSTRALIA						TASMANIA					
	Males		Females		Persons		Males		Females		Persons	
	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	7	10.7	4	6.5	11	8.6	5	29.8	..	12.7	7	21.6
5–9	5	7.3	..	4.6	8	6.0	..	5.7	..	5.9	..	5.8
10–14	5	7.2	..	3.0	7	5.1	..	0.0	..	0.0	..	0.0
15–19	42	62.7	20	31.6	62	47.6	12	69.3	4	24.2	16	47.2
20–24	79	116.1	21	32.4	100	75.3	10	65.7	..	20.2	13	43.2
25–29	97	131.9	20	28.2	117	81.0	16	99.3	..	0.0	16	49.1
30–34	72	102.7	11	15.8	83	59.4	10	63.2	..	6.0	11	33.8
35–39	63	84.6	21	28.3	84	56.5	16	87.6	6	31.6	22	59.0
40–44	51	72.4	14	19.8	65	46.0	9	51.1	4	22.4	13	36.6
45–49	30	44.9	9	13.8	39	29.6	4	24.1	5	30.2	9	27.1
50–54	27	46.6	8	14.9	35	31.3	10	66.5	..	20.5	13	43.8
55–59	16	37.3	5	12.4	21	25.2	9	76.2	..	8.7	10	42.9
60–64	25	73.1	7	20.7	32	47.1	..	30.5	..	30.0	6	30.3
65–69	20	67.5	11	36.5	31	51.9	6	66.9	..	21.2	8	43.5
70–74	19	77.8	13	48.0	32	62.1	4	51.6	..	22.7	6	36.2
75–79	24	145.3	13	59.8	37	96.7	6	112.2	6	80.9	12	94.0
80–84	21	233.9	20	134.8	41	172.1	8	256.0	5	96.2	13	156.3
85+	29	486.0	40	299.9	69	357.5	9	507.3	15	362.0	24	405.5
Total^(b)	632	73.9	242	26.6	874	49.6	138	63.9	63	24.3	201	43.2

continued

..Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1998 where the UCoD was an External Cause code in the range E800–E999 (ICD-9).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

Table A2.3 (continued): Death registrations – counts and age-specific rates for males, females and persons by five-year age groups for states and territories; Australia, 1998^(a)

Age group (years)	NORTHERN TERRITORY						AUSTRALIAN CAPITAL TERRITORY					
	Males		Females		Persons		Males		Females		Persons	
	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	..	21.8	..	11.6	..	16.9	..	9.2	..	0.0	..	4.7
5–9	..	33.7	..	24.4	5	29.3	..	0.0	..	9.1	..	4.5
10–14	..	12.6	4	52.7	5	32.3	..	0.0	..	0.0	..	0.0
15–19	14	186.2	5	73.0	19	132.2	4	32.3	..	0.0	4	16.6
20–24	14	160.2	10	127.1	24	144.5	14	101.3	..	22.8	17	63.0
25–29	20	197.0	..	31.5	23	116.8	9	68.1	..	14.8	11	41.2
30–34	20	219.9	6	71.2	26	148.4	8	66.2	..	16.1	10	40.8
35–39	11	124.2	6	74.9	17	100.8	6	48.1	..	0.0	6	23.6
40–44	16	214.2	..	42.5	19	130.8	7	60.1	..	8.0	8	33.2
45–49	5	72.5	..	33.6	7	54.5	7	59.6	..	0.0	7	29.1
50–54	8	140.9	4	89.7	12	118.4	6	57.9	..	19.6	8	38.9
55–59	6	154.3	..	0.0	6	90.5	4	58.9	..	45.8	7	52.4
60–64	..	89.3	..	0.0	..	50.4	..	20.6	..	20.7	..	20.7
65–69	..	202.0	..	0.0	..	114.2	..	78.1	..	25.4	4	51.4
70–74	..	319.1	..	124.1	4	229.1	..	65.3	..	0.0	..	29.8
75–79	..	401.6	..	188.7	..	291.8	..	0.0	..	69.7	..	40.2
80–84	..	892.9	..	0.0	..	371.1	5	494.6	..	111.6	7	249.7
85+	..	0.0	..	413.2	..	244.5	5	888.1	4	305.3	9	480.5
Total^(b)	132	155.0	49	59.5	181	109.3	82	65.3	24	18.5	106	39.3

.. Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1998 where the UCoD was an External Cause code in the range E800–E999 (ICD-9).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

Table A2.4 : Death registrations—counts and age-specific rates for males, females and persons by five-year age groups for states and territories; Australia, 1999^(a)

Age group (years) ^(c)	NEW SOUTH WALES						VICTORIA					
	Males		Females		Persons		Males		Females		Persons	
	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	31	13.9	20	9.4	51	11.7	15	9.4	9	6.0	24	7.7
5–9	12	5.2	14	6.4	26	5.8	8	4.8	..	1.9	11	3.4
10–14	13	5.8	6	2.8	19	4.3	12	7.4	8	5.1	20	6.3
15–19	99	44.7	42	20.0	141	32.7	84	52.7	27	17.6	111	35.5
20–24	196	89.7	48	22.6	244	56.7	150	91.6	47	29.3	197	60.8
25–29	243	99.1	42	16.9	285	57.8	198	108.9	51	27.4	249	67.7
30–34	219	92.8	41	17.2	260	54.8	145	81.7	44	24.1	189	52.5
35–39	178	69.4	56	21.8	234	45.6	137	74.3	35	18.6	172	46.2
40–44	164	68.8	52	21.6	216	45.1	114	65.7	34	19.2	148	42.3
45–49	119	53.6	54	24.4	173	39.0	93	58.0	28	17.0	121	37.2
50–54	109	52.6	41	20.4	150	36.8	73	49.2	25	16.8	98	33.0
55–59	78	48.7	29	18.7	107	34.0	45	39.2	17	15.0	62	27.2
60–64	69	51.8	25	18.7	94	35.2	53	55.2	19	19.4	72	37.1
65–69	63	53.8	32	26.2	95	39.7	39	45.9	21	23.4	60	34.4
70–74	92	88.5	44	37.1	136	61.1	48	64.0	22	25.4	70	43.3
75–79	91	120.7	57	56.9	148	84.3	56	104.2	48	65.8	104	82.1
80–84	78	194.6	69	104.8	147	138.8	49	173.3	51	109.2	100	133.4
85+	106	429.0	167	286.4	273	328.9	76	392.2	130	295.4	206	325.0
Total^(b)	1,962	64.8	840	24.2	2,802	43.8	1,395	62.6	619	24.0	2,014	42.7

continued

.. Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1999 where the UCoD was an External Cause code in the range V00–Y89 (ICD-10).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

(c) Age was not reported for three cases.

Table A2.4 (continued): Death registrations – counts and age-specific rates for males, females and persons by five-year age groups for states and territories; Australia, 1999^(a)

Age group (years) ^(c)	QUEENSLAND						SOUTH AUSTRALIA					
	Males		Females		Persons		Males		Females		Persons	
	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	27	21.5	22	18.5	49	20.1	10	20.6	5	10.8	15	15.8
5–9	7	5.3	4	3.2	11	4.3	..	1.9	..	4.1	..	3.0
10–14	12	9.3	10	8.1	22	8.7	4	7.7	5	10.1	9	8.9
15–19	89	68.8	23	18.6	112	44.2	31	60.7	10	20.5	41	41.0
20–24	122	98.4	24	19.6	146	59.2	45	90.5	9	19.0	54	55.7
25–29	136	99.7	33	24.2	169	62.0	49	90.1	8	15.2	57	53.2
30–34	115	90.6	30	23.2	145	56.5	37	68.3	17	31.7	54	50.1
35–39	102	74.8	25	17.9	127	46.0	46	78.5	11	18.7	57	48.6
40–44	82	63.3	30	22.9	112	43.0	42	75.2	12	21.3	54	48.1
45–49	73	59.1	12	9.8	85	34.5	23	43.6	14	25.9	37	34.7
50–54	71	61.1	21	18.9	92	40.4	17	34.5	9	18.1	26	26.3
55–59	51	57.9	17	20.4	68	39.7	18	48.0	4	10.7	22	29.4
60–64	44	62.7	17	25.3	61	44.4	15	47.3	5	15.3	20	31.0
65–69	36	61.2	11	18.6	47	39.9	22	76.4	7	23.0	29	48.9
70–74	42	81.9	16	28.6	58	54.1	16	58.9	9	29.1	25	43.0
75–79	43	116.0	18	38.6	61	72.9	12	60.4	11	41.0	23	49.2
80–84	43	214.3	40	129.3	83	162.7	13	121.2	12	68.8	25	88.8
85+	66	516.5	101	370.2	167	416.9	14	203.7	37	228.0	51	220.7
Total^(b)	1,161	71.0	454	25.2	1,615	47.5	415	56.7	187	22.3	602	39.5

continued

.. Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1999 where the UCoD was an External Cause code in the range V00–Y89 (ICD-10).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

(c) Age was not reported for one case.

Table A2.4 (continued): Death registrations – counts and age-specific rates for males, females and persons by five-year age groups for states and territories; Australia, 1999^(a)

Age group (years) ^(c)	WESTERN AUSTRALIA						TASMANIA					
	Males		Females		Persons		Males		Females		Persons	
	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	19	28.9	8	12.9	27	21.2	..	6.1	..	12.8	..	9.4
5–9	5	7.2	..	4.6	8	5.9	..	11.3	..	12.0	4	11.6
10–14	6	8.5	5	7.4	11	8.0	..	16.9	..	0.0	..	8.6
15–19	54	79.1	12	18.6	66	49.7	16	93.1	5	30.1	21	62.2
20–24	72	107.3	12	18.8	84	64.1	18	122.2	7	48.5	25	85.7
25–29	80	109.3	24	33.9	104	72.2	11	70.9	6	37.5	17	54.0
30–34	65	92.4	19	27.2	84	59.9	21	136.0	..	18.5	24	75.7
35–39	51	67.8	11	14.7	62	41.3	16	89.0	4	21.3	20	54.5
40–44	39	54.6	17	23.6	56	39.0	16	89.9	5	27.8	21	58.7
45–49	36	53.2	11	16.5	47	35.0	16	95.6	8	47.7	24	71.6
50–54	30	49.3	5	8.8	35	29.7	6	39.0	4	26.4	10	32.7
55–59	18	40.0	13	30.8	31	35.5	9	73.4	..	16.8	11	45.5
60–64	15	41.7	10	28.4	25	35.1	..	29.4	..	19.6	5	24.5
65–69	20	67.4	5	16.5	25	41.6	5	55.7	..	10.7	6	32.8
70–74	19	75.8	11	39.9	30	57.0	..	25.3	4	45.5	6	35.9
75–79	16	90.5	17	74.3	33	81.4	7	124.4	7	91.1	14	105.2
80–84	17	188.2	15	101.7	32	134.6	8	257.2	6	115.0	14	168.1
85+	28	440.1	50	352.0	78	379.3	7	367.8	17	388.1	24	382.0
Total^(b)	591	67.4	248	26.6	839	46.8	167	76.0	85	33.3	252	54.2

continued

.. Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1999 where the UCoD was an External Cause code in the range V00–Y89 (ICD-10).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

(c) Age was not reported for one case.

Table A2.4 (continued): Death registrations – counts and age-specific rates for males, females and persons by five-year age groups for states and territories; Australia, 1999^(a)

Age group (years)	NORTHERN TERRITORY						AUSTRALIAN CAPITAL TERRITORY					
	Males		Females		Persons		Males		Females		Persons	
	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	..	33.0	..	23.6	5	28.4	..	9.2	..	9.6	..	9.4
5–9	..	11.1	..	12.0	..	11.5	..	0.0	..	0.0	..	0.0
10–14	..	12.4	..	0.0	..	6.4	..	0.0	..	0.0	..	0.0
15–19	8	104.8	4	56.9	12	81.9	4	32.1	..	8.5	5	20.7
20–24	20	233.2	..	38.7	23	140.9	7	52.2	4	31.1	11	41.9
25–29	20	196.8	..	31.5	23	116.8	9	68.3	..	0.0	9	33.9
30–34	15	164.8	..	34.9	18	101.7	5	41.4	4	32.0	9	36.6
35–39	9	100.1	..	36.8	12	70.0	6	47.8	..	15.5	8	31.4
40–44	13	170.6	..	28.1	15	101.9	4	34.2	..	0.0	..	16.5
45–49	6	84.8	..	48.3	9	67.7	7	59.7	6	48.6	13	54.0
50–54	..	33.4	..	21.0	..	27.9	5	46.4	..	18.5	7	32.4
55–59	..	24.1	..	0.0	..	14.0	9	125.9	..	0.0	9	63.8
60–64	..	82.5	..	0.0	..	47.6	..	58.8	..	0.0	..	29.5
65–69	..	0.0	..	0.0	..	0.0	..	25.5	..	0.0	..	12.6
70–74	..	0.0	..	243.6	..	109.0	4	125.0	..	80.7	7	101.2
75–79	..	0.0	..	177.3	..	91.9	4	174.1	..	96.5	7	129.5
80–84	..	0.0	..	0.0	..	0.0	..	282.5	..	53.4	4	136.3
85+	..	0.0	..	0.0	..	0.0	4	660.1	5	348.7	9	441.2
Total^(b)	101	87.1	28	36.4	129	63.0	76	60.5	32	22.5	108	39.9

.. Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1999 where the UCoD was an External Cause code in the range V00–Y89 (ICD-10).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

Table A2.5: Case counts and rates for major causes of death for males; Australia 1999^(a)

Age group (years) ^(c)	Transportation ICD10 V01–V99		Drowning ICD10 W65–W74		Poisoning, pharmaceuticals X40–X44		Poisoning, other substances X45–X49		Falls ICD10 W00–W19		Smoke, fire and flames, heat and hot substances ICD10 X00–X19		Other unintentional ICD10 W20–W64, W75–W99, X20–X39, X50–X59, Y85, Y86, Y89.9		Suicide ICD10 X60–X84	
	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates
	0–4	25	3.8	41	6.2	27	4.1	..
5–9	17	2.5	5	0.7	..	..	..	..	..	..	..	..	7	1.0	..	..
10–14	22	3.2	..	..	..	..	..	..	..	..	..	..	9	1.3	10	1.5
15–19	200	30.0	11	1.7	28	4.8	4	0.6	..	..	..	..	25	3.8	97	14.6
20–24	207	31.4	19	2.9	108	17.0	4	0.6	13	2.0	..	..	35	5.3	212	32.1
25–29	177	24.2	20	2.7	177	24.5	..	..	12	1.6	..	..	38	4.9	272	37.3
30–34	129	18.4	12	1.7	140	20.8	6	0.9	13	1.9	4	0.6	40	5.6	235	33.5
35–39	109	14.5	15	2.0	115	16.0	5	0.7	9	1.2	7	0.9	30	3.9	224	29.8
40–44	97	13.7	11	1.6	82	12.2	4	0.6	10	1.4	5	0.7	33	4.7	203	28.8
45–49	77	11.6	12	1.8	42	6.6	..	..	16	2.4	4	0.6	35	5.3	165	24.9
50–54	51	8.3	14	2.3	22	5.0	9	1.5	19	3.1	5	0.8	36	5.9	147	23.9
55–59	58	12.4	12	2.6	4	1.5	..	..	17	3.6	..	..	21	4.3	102	21.7
60–64	52	13.5	4	1.0	7	3.1	5	1.3	16	4.2	..	..	27	6.0	74	19.2
65–69	62	18.6	6	1.8	..	..	..	..	16	4.8	4	1.2	17	4.5	63	18.9
70–74	43	14.6	7	2.4	6	2.7	..	..	43	14.6	..	..	32	6.4	77	26.1
75–79	49	23.1	7	3.3	6	4.2	..	..	37	17.4	..	..	62	12.7	54	25.4
80–84	36	32.0	..	..	..	..	..	..	29	25.8	6	5.3	84	17.8	38	33.7
85+	29	39.8	..	..	..	..	..	..	55	75.5	5	6.9	175	31.6	29	39.8
All ages^(b)	1,441	15.6	203	2.2	745	8.4	56	0.6	309	4.0	58	0.7	734	5.2	2,002	21.6

continued

.. Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1999 where the UCoD was an External Cause code in the range V00–Y89 (ICD-10).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

(c) Age was not reported for 3 cases.

Table A2.5 (continued): Case counts and rates for major causes of death for males; Australia 1999^(a)

Age group (years)	Homicide ICD10 X85–Y09		Undetermined intent		Medical misadventure, etc.	
	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	11	1.7	..	..	..	..
5–9	4	0.6	..	..	..	..
10–14	..	..	..	..	..	..
15–19	14	2.1	..	..	..	..
20–24	19	2.9	11	1.7	..	..
25–29	33	4.5	12	1.6	..	..
30–34	32	4.6	11	1.6	..	..
35–39	23	3.1	8	1.1	..	..
40–44	16	2.3	12	1.7	..	..
45–49	18	2.7	..	..	..	..
50–54	8	1.3	..	..	..	..
55–59	10	2.1	..	..	..	..
60–64	10	2.6	..	..	5	1.3
65–69	5	1.5	..	..	6	1.8
70–74	4	1.4	..	..	8	2.7
75–79	..	..	..	..	9	4.2
80–84	..	..	..	..	11	9.8
85+	..	..	..	..	4	5.5
All ages^(b)	210	2.2	64	0.7	46	0.6

.. Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1999 where the UCoD was an External Cause code in the range V00–Y89 (ICD-10).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

Table A2.6: Case counts and rates for major causes of death for females; Australia 1999^(a)

Age group (years) ^(c)	Transportation ICD10 V01–V99		Drowning ICD10 W65–W74		Poisoning, pharmaceuticals X40–X44		Poisoning, other substances X45–X49		Falls ICD10 W00–W19		Smoke, fire and flames, heat and hot substances ICD10 X00–X19		Other unintentional ICD10 W20–W64, W75–W99, X20–X39, X50–X59, Y85, Y86, Y89.9		Suicide ICD10 X60–X84	
	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	24	3.8	19	3.0	..	..	..	..	..	..	9	1.4	6	1.0	..	..
5–9	19	2.9	4	0.6	..	..	..	..	..	..	..	..	..	..	..	..
10–14	24	3.7	..	..	..	..	..	..	..	..	..	..	..	..	7	1.1
15–19	59	9.3	..	..	19	3.1	..	..	..	..	..	..	5	0.8	27	4.2
20–24	57	8.9	..	..	31	4.8	..	..	..	..	..	..	4	0.6	44	6.9
25–29	46	6.3	6	0.8	39	5.5	..	..	..	..	..	..	5	0.4	55	7.5
30–34	38	5.3	4	0.6	36	5.3	..	..	..	..	..	..	5	0.7	61	8.6
35–39	31	4.1	..	..	32	4.2	..	..	..	..	..	..	10	1.1	48	6.3
40–44	26	3.6	..	..	37	5.5	..	..	..	..	..	..	12	1.7	56	7.8
45–49	27	4.1	5	0.8	20	3.6	4	0.6	7	1.1	..	..	5	0.6	57	8.6
50–54	33	5.5	6	1.0	16	2.8	..	..	..	..	..	..	..	..	40	6.7
55–59	24	5.3	4	0.9	13	3.3	..	..	4	0.9	..	..	6	1.1	20	4.4
60–64	25	6.5	..	..	8	2.1	..	..	6	1.6	..	..	9	2.1	22	5.7
65–69	30	8.7	..	..	7	2.3	..	..	5	1.4	..	..	9	0.9	17	4.9
70–74	32	9.6	..	..	4	1.5	..	..	21	6.3	4	1.2	27	2.4	12	3.6
75–79	32	11.4	7	2.5	..	..	..	..	31	11.0	..	..	63	7.1	10	3.6
80–84	25	13.7	..	..	..	..	..	..	36	19.7	4	2.2	98	9.8	8	4.4
85+	18	10.8	..	..	..	..	..	..	90	54.2	5	3.0	371	30.7	5	3.0
All ages^(b)	570	5.9	75	0.8	271	3.0	16	0.2	211	1.9	43	0.4	641	1.6	490	5.1

continued

.. Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1999 where the UCoD was an External Cause code in the range V00–Y89 (ICD-10).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

(c) Age not reported in 1 case.

Table A2.6 (continued): Case counts and rates for major causes of death for females; Australia 1999^(a)

Age-group (Years)	Homicide ICD 10 X85–Y09		Undetermined intent		Medical misadventure, etc.	
	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	9	1.4	..	..	..	..
5–9	..	..	..	..	..	..
10–14	..	..	..	..	..	..
15–19	6	0.9	..	..	..	..
20–24	12	1.9	..	..	..	..
25–29	10	1.4	4	0.5	..	..
30–34	7	1.0	4	0.6	..	..
35–39	15	2.0	..	..	..	..
40–44	9	1.3	..	..	..	..
45–49	5	0.8	..	..	..	..
50–54	..	..	4	0.7	..	..
55–59	..	..	..	..	..	..
60–64	..	..	..	..	..	..
65–69	..	..	..	..	..	..
70–74	..	..	..	..	5	1.5
75–79	..	..	..	..	10	3.6
80–84	4	2.2	..	..	14	7.6
85+	..	..	..	..	13	7.8
All ages^(b)	96	1.0	24	0.3	56	0.5

.. Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1999 where the UCoD was an External Cause code in the range V00–Y89 (ICD-10).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

Table A2.7: Case counts and rates for major causes of death for persons; Australia 1999(a)

Age group (years) ^(c)	Transportation ICD10 V01–V99		Drowning ICD10 W65–W74		Poisoning, pharmaceuticals X40–X44		Poisoning, other substances X45–X49		Falls ICD10 W00–W19		Smoke, fire and flames, heat and hot substances ICD10 X00–X19		Other unintentional ICD10 W20–W64, W75–W99, X20–X39, X50–X59, Y85, Y86, Y89.9		Suicide ICD10 X60–X84	
	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	49	3.8	60	4.7	..	0.1	..	..	..	..	12	0.9	33	2.6	..	..
5–9	36	2.7	9	0.7	..	0.1	..	..	..	..	..	0.1	9	0.7	..	..
10–14	46	3.5	..	..	..	0.2	..	..	0	0.0	4	0.3	11	0.8	17	1.3
15–19	259	19.9	14	1.1	47	4.0	5	0.4	4	0.3	..	..	30	2.3	124	9.5
20–24	264	20.3	22	1.7	139	11.0	4	0.3	14	1.1	..	..	39	3.0	256	19.7
25–29	223	15.2	26	1.8	216	15.0	..	..	12	0.8	..	..	43	2.7	327	22.4
30–34	167	11.8	16	1.1	176	13.0	8	0.6	14	1.0	6	0.4	45	3.1	296	21.0
35–39	140	9.3	18	1.2	147	10.1	5	0.3	11	0.7	8	0.5	40	2.5	272	18.0
40–44	123	8.7	13	0.9	119	8.8	6	0.4	13	0.9	8	0.6	45	3.2	259	18.2
45–49	104	7.8	17	1.3	62	5.1	6	0.5	23	1.7	7	0.5	40	2.9	222	16.7
50–54	84	6.9	20	1.6	38	4.0	10	0.8	21	1.7	6	0.5	38	3.1	187	15.4
55–59	82	8.9	16	1.7	17	2.4	5	0.5	21	2.3	..	..	27	2.7	122	13.2
60–64	77	10.0	6	0.8	15	2.6	5	0.7	22	2.9	..	..	36	4.0	96	12.5
65–69	92	13.5	8	1.2	10	2.1	4	0.6	21	3.1	5	0.7	26	2.6	80	11.8
70–74	75	11.9	9	1.4	10	2.1	..	0.5	64	10.2	5	0.8	59	4.3	89	14.2
75–79	81	16.4	14	2.8	8	2.4	4	0.8	68	13.8	5	1.0	125	9.5	64	13.0
80–84	61	20.6	..	..	5	2.0	..	..	65	22.0	10	3.4	182	12.9	46	15.6
85+	47	19.7	4	1.7	4	2.1	..	..	145	60.7	10	4.2	546	31.0	34	14.2
All ages	2,011	10.6	278	1.5	1,016	5.7	72	0.4	520	2.9	101	0.5	1,375	3.3	2,492	13.2

continued

.. Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1999 where the UCoD was an External Cause code in the range V00–Y89 (ICD-10).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

(c) Age was missing in 4 cases.

Table A2.7 (continued): Case counts and rates for major causes of death for persons; Australia 1999(a)

Age group (years)	Homicide ICD10 X85–Y09		Undetermined intent		Medical misadventure, etc.	
	Case counts	Rates	Case counts	Rates	Case counts	Rates
0–4	20	1.6	..	..	..	..
5–9	6	0.4	..	..	..	..
10–14	..	..	..	..	..	..
15–19	20	1.5	..	..	..	..
20–24	31	2.4	12	0.9	..	..
25–29	43	2.9	16	1.1	..	..
30–34	39	2.8	15	1.1	..	..
35–39	38	2.5	11	0.7	..	..
40–44	25	1.8	13	0.9	..	..
45–49	23	1.7	..	..	..	..
50–54	10	0.8	6	0.5	..	..
55–59	13	1.4	..	..	..	..
60–64	13	1.7	..	..	7	0.9
65–69	8	1.2	..	..	8	1.2
70–74	7	1.1	..	..	13	2.1
75–79	..	..	..	..	19	3.9
80–84	5	1.7	..	..	25	8.5
85+	..	..	..	..	17	7.1
All ages^(b)	306	1.6	88	0.5	102	0.6

.. Case counts are not shown where the cell count is less than 4.

(a) Deaths registered in 1999 where the UCoD was an External Cause code in the range V00–Y89 (ICD-10).

(b) Total rates are age-standardised rates, while the others in this table are age-specific.

INJURY RESEARCH & STATISTICS

This report describes injury mortality in Australia during 1999. It includes information about the major causes of injury such as transport-related deaths, suicide and accidental falls. The data provided in relation to each cause include age and sex, state and territory differences, trends over time, and other associated factors. It also examines, in detail, the implications of the transition from Version 9 to Version 10 of the International Classification of Diseases.

The report will be relevant to anyone interested in gaining an insight into patterns of injury mortality and the burden it imposes on the Australian community.

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